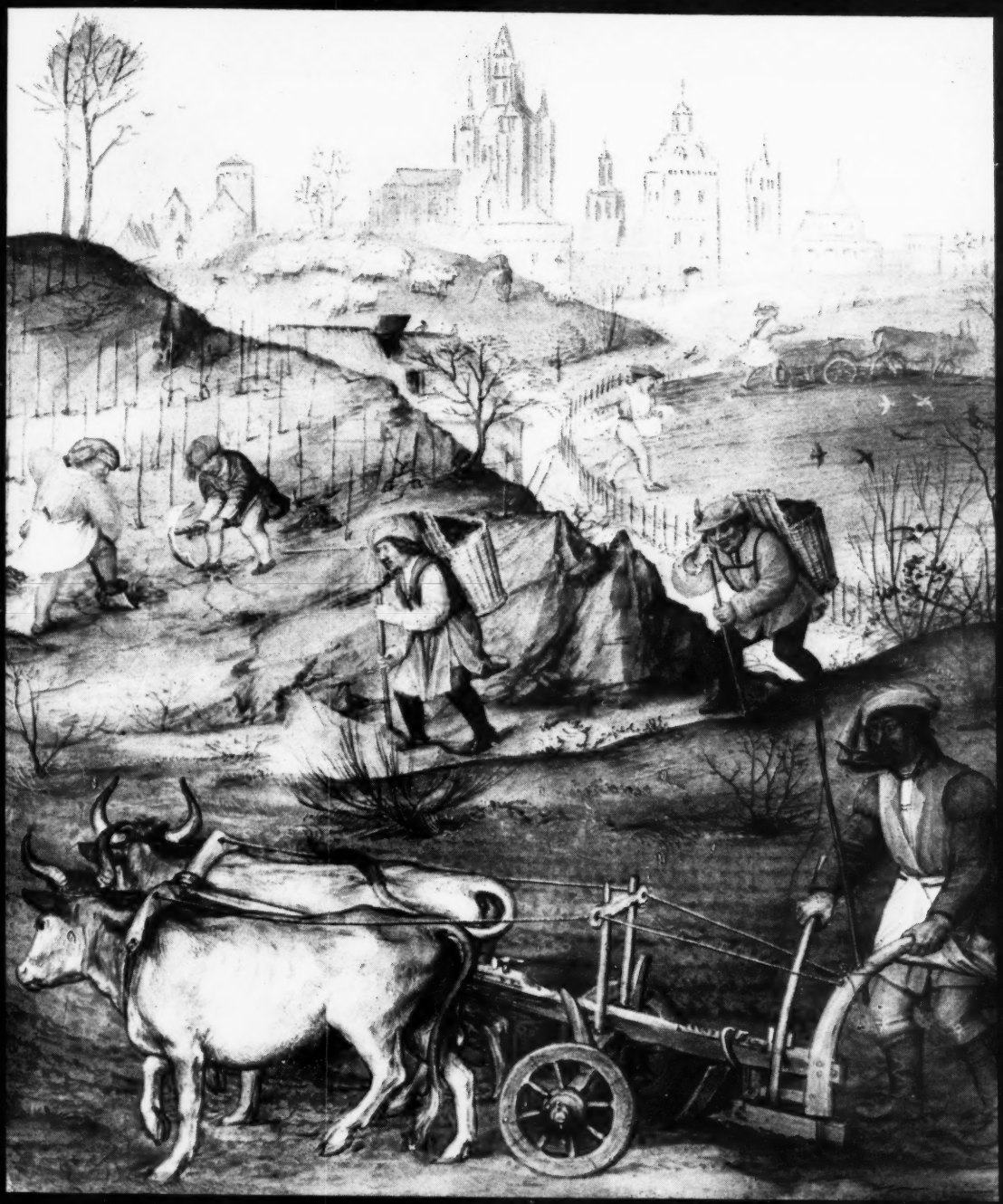

THE GARDEN JOURNAL

OF THE NEW YORK BOTANICAL GARDEN

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THE GARDEN JOURNAL
of The New York Botanical Garden

DOROTHY EBEL HANSELL
Editor

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January-February 1957

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AMONG OUR CONTRIBUTORS

DR. WILLIAM J. ROBBINS, Director of The New York Botanical Garden, reports to the members on the "Busman's Holiday" he enjoyed in the British Isles and on the European continent during this past summer . . . SAM McGREDY, of the fourth generation of the famous rose growing family of northern Ireland, gave a delightful talk at the 1956 annual meeting of the American Rose Society in Portland, Oregon, which we present with his permission and that of the American Rose Society, in this issue . . . MARIAN W. (MRS. GEORGE E.) De COURSEY'S interest in begonias dates back several years when she was invited to join the Philobegonia Branch of the American Begonia Society. Since that branch meets in Merchantville, New Jersey, it seemed a good idea to start a branch nearer home and with the help of six other begonia enthusiasts, the William Penn Branch was formed in January 1950, with Mrs. De Coursey as its first president. The branch now numbers twenty-two members who grow, study, and exhibit begonias with a great deal of enthusiasm and success. Recently, the William Penn and Margaret Gruenbaum Branches of the American Begonia Society cooperated in staging a most effective display at the fall 1956 show of the Pennsylvania Horticultural Society held in Swarthmore, Pa. The exhibit was awarded the Pennsylvania Horticultural Society's flower show award "made to an exhibit of special merit which stimulates interest in horticulture". . . MARJORIE (MRS. KARL) WIHTOL has as delightful a flair for writing about her house plants as she has the coveted "green thumb" to grow them successfully in her home in Middletown, New Jersey . . . We believe our readers will be as interested in the account of New Jersey Bonsai as we were when we read the article by ROSE B. (MRS. WILLIAM G.) HOUSKEEPER in the Bulletin of the Garden Club of America. Recently Mrs. Houskeeper took some members of the Garden Club of the Oranges into the woods around her home in Newton, New Jersey, where they dug up some of these "dwarfed" junipers. Mrs. Thomas D. Thacher, a member of the Advisory Council of The New York Botanical Garden, who when she first heard about "New Jersey Bonsai" thought it a "wild idea," has since changed her mind, for she was in the party of diggers at Mrs. Houskeeper's home . . . MARION R. WALKER is president of the American Iris Society . . . T. H. EVERETT, our Curator of Education and Horticulturist, is giving our readers invaluable information in a series of articles on gardening techniques, accompanied by excellent step-by-step illustrations . . . MARGARET (MRS. ALEXANDER) PINNEY has spent many years in research on miniature roses and has one of the best collections in the country of these dainty plants in her garden at Armonk, New York . . . WILLIAM K. ISHIZU grows, hybridizes and imports chrysanthemums at his establishment in San Gabriel, California . . . GERTRUDE B. FOSTER is editor of "Herb Grower Magazine."

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Busman's Holiday

By **William J. Robbins**

FOR SOME YEARS I have been interested in the morphological and physiological changes which occur as a plant grows from seedling to adult. These changes are especially pronounced for some kinds of plants. The English ivy, for example, grown from seed is a vine with palmately lobed leaves and aerial roots, but eventually it produces (usually near the top of the plant) blooming branches with elliptical entire leaves and no aerial roots. Cuttings of the adult blooming branches develop into shrubs *(Hedera helix* var. *arborescens)* which do not normally revert to the vine type of growth. Seeds from the arborescent ivy germinate and form the juvenile vine type of growth. At one time botanists classified the vine and arborescent forms of *Hedera* as two separate species, not realizing that they are different stages of the same plant.

Another curious phenomenon of horticultural significance is the difference in the form of a plant which develops from a leader used as a scion or cutting and one grown from a cutting or scion of a side branch. For some kinds of plants, *Taxus, Abies* sp. and *Araucaria excelsa,* for example, propagations from side branches grow into prostrate and often unsymmetrical and ill-formed plants as compared to the upright and symmetrical plants obtained from leaders. Since I knew that nurserymen, gardeners, and propagators in Europe have a great deal of information on these phenomena and a number of scientists are working on the causes, I decided to visit some places abroad and learn what I could first hand. In addition, I intended to participate in a conference in Paris in September on the contributions made by early French botanists to the knowledge of the plants of North America. Mrs. Robbins, who has some interest in the Van Cortlandt House, wished to see Dutch furniture and rooms of the eighteenth century, so we planned a trip which took us to England, Scotland, Denmark, Holland, Belgium, and France and left July 19 on the "Queen Mary."

On arriving at Southampton we found quarters in the Polygon Hotel. Southampton still shows considerable evidence of bomb damage from the last war; in many of the bombed-out areas *Buddleia* is growing naturally and in profusion. The sinking of the "Andrea Doria" made a monument to the engineers, all from Southampton, who died on the Titanic, of especial interest to us.

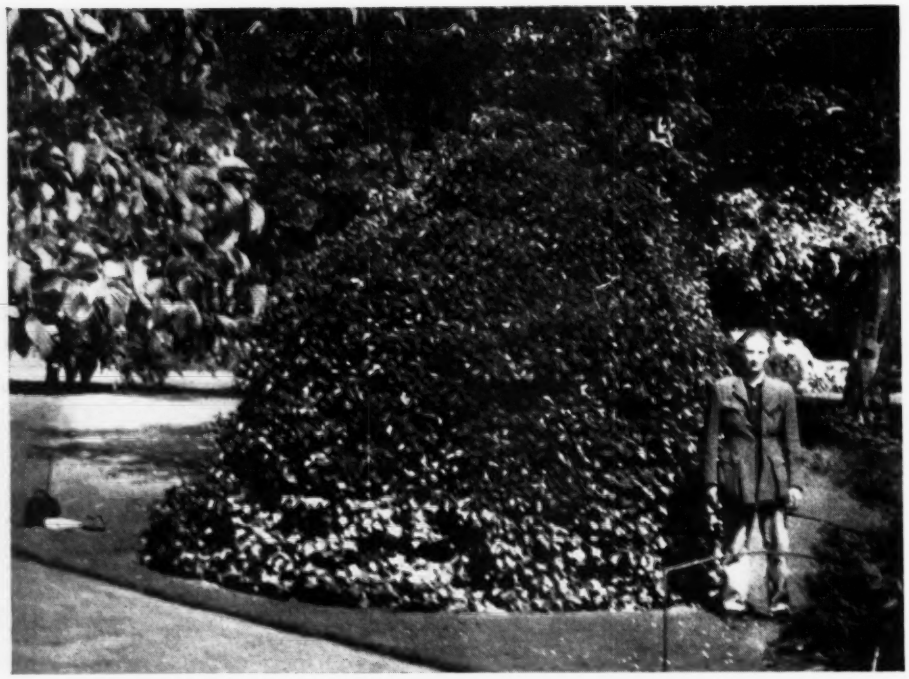
We were fortunate that the next day was sunny, one of the few sunny days we experienced in Great Britain, for our visit to Hillier Nursery at Winchester some twenty miles away. The Hillier Nursery was founded by the grandfather of the present owner who, some ninety-five years ago, was undecided whether to settle in Winchester or Yorkshire. The toss of a coin made the decision. He proceeded to raise grapes, peaches, and other market crops on the ten acres of thin chalky soil which make up the home nursery in Winchester. The second Hillier developed an interest in ornamental plants, and the firm now has a total of about three hundred acres in seven different plots, some of which are on richer and acid soil.

The present owner, H. G. Hillier, is essentially a plantsman. At twelve years of age he began studying plants in his father's collection, making notes on their appearance at different times of the year, and learning names. As a result of natural aptitude and his long years of experience, he has a most extraordinary fund of knowledge, and it was a privilege, of which I could not take full advantage, to see something of his collections and to listen to his comments. We spent the day in his company inspecting plants, had lunch at an old Winchester inn, and tea with his charming wife at their new home, the grounds of which he is rapidly transforming into a small botanical garden.

To enumerate all the interesting plants I saw would result in a catalog. There were some from Chile and other parts of South America, from Australia, New Zealand, Teneriffe, South Africa, Siberia, the Himalayas, China and, of course, North America. Of particular interest to me were excellent examples of prostrate conifers grown from cuttings of side branches, pyramidical forms of the hornbeam, tuliptree and English oak, and a dwarf *Sequoia gigantea.* The Italian maple, *Acer Lobelii,* with ascending branches appealed to me as a good street tree for sections where it is hardy.

Comments on plants and observations on horticulture poured from Mr. Hillier in a steady stream. *Cornus florida,* after last year's hot summer, had flowered well; something it normally does not do. Siberian plants suffer from the cold at Winchester because, though they withstand very low winter temperatures while dormant, a few days of warm weather in February starts them growing, and freezing temperatures a month later kill the new growth. I regretted that I could not spend a month or two at Winchester absorbing part of the fund of information Mr. Hillier possesses, and enjoying the city of Winchester and its environs.

Winchester, a city of twenty-five to thirty thousand people, was the original capital of England. The impressive cathedral, built about 1100 on beech piles in a bog, began to sink, and it was necessary recently to lay a cement foundation under it. Winchester University is one of the oldest in England, and we admired the dignified and most beautiful war memorial there. Mr. Hil-



An arborescent ivy *(Hedera helix* var. *arborescens)* at the Royal Botanic Gardens, Kew, England

lier told us that in the last World War the bombing of Southampton, twenty miles away, shook the iron railing in front of the cathedral; Winchester itself suffered very little.

We could not leave Southampton without a trip through the New Forest where we saw not only many fine beeches and oaks but herds of "wild" horses which visit the villages, stand outside tea rooms, patiently waiting a hand-out, and contradict their "wild" label in many other ways. Considerable areas of the New Forest are covered with bracken, heather, and gorse and offer more room for reforestation than I had expected.

We left Southampton for London from where a series of excursions kept us more than busy.

Our call on Sir Edward Salisbury at Kew, in spite of his cordiality, was a sad one because in the midst of preparing to retire he had lost his wife. The Director who follows Sir Edward is Dr. George Taylor of the British Museum. We noted that reconstruction of the Palm House was well under way, saw broken limbs and uprooted trees from a recent exceptional storm, admired the specimen trees so noteworthy at Kew, and through the courtesy of Dr. S. A. Pearce, Deputy Curator, spent a good deal of time examining juvenile and adult ivy, including a substantial number of tree ivies.

At Reading I visited Professor R. H. Stoughton at the Horticultural Research Station. This occupies a remodeled brick mansion and its grounds; the house has been transformed into laboratories and offices, the stables into a series of chambers for the exposure of plants to light of different duration and quality. Special attention is devoted to chrysanthemums, carnations, and black currants. A lovely garden with some experimental work on root stocks for roses lies behind the laboratories.

The Garden Club of America and the English Speaking Union have cooperated in an Interchange Fellowship in Horticulture for women; a number of fellows from the United States have studied at the University of Reading and some from Reading have come to this country.

At Wisley the Director, Dr. F. P. Knight, was on vacation, but Dr. D. E. Green, mycologist, graciously gave us a detailed inspection of the building constructed two years ago by the Royal Horticultural Society at a cost of forty-five thousand pounds, as a dormitory for student-gardeners and a public restaurant for visitors. A tulip-tree planted by the Queen Mother, when the building was dedicated, is a center of considerable attraction.

We discussed with P. J. Dykes, superintendent of glass houses, the problems in propagation which were of

The dormitory for student gardeners at Wisley

An English oak about one thousand years old in Windsor Great Park

interest to us and saw the newly described parasite, *Buckleya distichiophylla,* growing on the roots of *Thuja.* We lunched in the restaurant, wandered through the grounds and admired the plantings including the noteworthy rock garden. Of course, the vigor of the Royal Horticultural Society and its Wisley is always a matter of some astonishment and, perhaps, envy to garden-minded Americans.

The East Malling Research Station, of about three hundred and sixty acres, is located near Maidstone in Kent. From the Victoria Station one should be sure to alight at East Malling Halt, which is some ten minutes walk from the laboratories, and not get off, as I did, at East Malling. The Research Station is best known for the demonstration of the importance of suitable stocks for apples, but its scientific staff of over one hundred covers nearly all aspects of fruit growing. I was concerned primarily with their investigations of juvenility in apples and discussed the problem with Dr. R. J. Garner, especially the development of sphaeroblasts. Dr. H. B. S. Montgomery, scientific liaison officer, was most helpful and guided me through the orchard demonstrating, as we went, the extraordinary effects of various stocks on the form, vigor, and fruitfulness of apples.

Although Mrs. Robbins and I had visited Windsor Castle, we had never been to Windsor Great Park which can only be seen by the public on foot, an impossible task because of its extent. On this occasion, after lunching at the local inn on braised ox tail and a pint of bitters with Sir Eric Savill, his assistant, and Lanning Roper, who is writing a history of the park, Sir Eric was kind enough to act as our driver and our guide. As we drove in the rain over woodland roads, stopping from time to time to inspect some special item, we saw English oaks a thousand years old, huge beeches, the Valley Gardens with over three thousand species and forms of rhododendrons (the most complete collection in the world), the famous punch bowl of Kurume azaleas, views through the mist of Windsor Castle and the Royal Lodge, cultivated fields, herds of cattle, bits of planted forest, and the Savill Gardens. Windsor Great Park is most impressive because of its size (forty-five hundred acres), the extensive plantings of ornamental plants in the natural forest and exotic specimen trees which loom up in the native woodland. We did not see the long allées, so characteristic of French parks, but for that very reason Windsor Great Park has a charm all its own, and Sir Eric Savill is the kind of man with whom I would be glad to spend a month in the Canadian bush, or within the limits of Windsor Great Park. This is not only a botanical garden, the importance of which will increase with time, but an estate run on business principles. It requires a rare combination of characteristics to manage such an enterprise.

Some one has said that landscape art should include the element of surprise; the visitor should not be permitted to anticipate what he will see. If this is correct, our visit to Windsor Great Park was a demonstration of this principle, because we never knew what would appear next as we skittered over slippery roads from place to place.

The American Philosophical Society of Philadelphia, of which I have the honor of being President, plans to celebrate in 1959 the one hundredth anniversary of the publication of the *Origin of the Species.* A Darwin celebration in 1958 is planned in Great Britain. It seemed desirable under the circumstances to consult Sir Charles Galton Darwin, grandson of Charles Darwin, who, though a physicist, has a great interest in biology, especially the population problem.

One morning, Mrs. Robbins and I took the train to Cambridge. We were met by Dr. John Gilmour, Director of the Cambridge Botanic Garden, and along with Mr. Younger, his assistant, inspected the development now under way which, in a most imaginative fashion, will increase the area of the Garden from twenty acres to forty. This is accomplished from the Cory bequest of nearly five hundred thousand pounds, left to the Garden some years ago.

Among the many interesting plants in the Cambridge Garden was a sequoia which had produced a bud sport, from which Dr. Gilmour told me cuttings had been distributed widely. With Dr. Gilmour we strolled past the lawns of Cambridge, had sherry and a pinch of snuff in the Senate House, visited Kings Chapel, and arrived at the home of Sir Charles for lunch. Conversation with him and with Lady Darwin was interrupted in order to make a brief visit to the University library where, under the guidance of Dr. Chesswick and Mr. Tillotson, we viewed their holdings of Darwiniana. Tea with the Darwins, looking out over the Cam River, gave us further opportunity to discuss matters of mutual interest and made us realize what a useful and pleasant function an English tea can be.

During the visit with Sir Charles we talked about the future of Down House, which was purchased by Buckston Brown and transferred in 1929 to the British Association for the Advancement of Science. It was later taken over by the Royal College of Surgeons, and Mrs. Robbins and I felt we could not leave London without a visit to the home where Darwin lived and worked. It is nearby the little village of Downe, Kent, and can be reached from London by an hour's bus ride followed by a twenty-minute walk —if you become impatient waiting for the local bus. The house is in need of some rehabilitation, though it is not in serious disrepair.

The most interesting part to me was the old study in which Darwin did most of his work. Cabinets stand along the wall with drawers labeled in Darwin's hand, "solder, cork borer, ground glass stoppers, clips and paper bands, sealing wax, litmus paper, seeds, pulley wheels, screws, files, camel's hair brushes etc." Some thirty bottles of chemicals, only one with a legible label (yellow prussiate of potash) are on a table. A small microscope, a burette on a wooden stand, a separatory funnel, a wet and dry bulb thermometer, and a few other items of equipment stand as though left only temporarily by the great biologist. Shelves on the walls hold Darwin's books, including one from Karl Marx inscribed by the author. A curtained convenience with no outside plumbing occupies a corner. One can almost see Darwin puttering over some piece of equipment or writing at his table.

The various rooms of the lower floor contain furniture, paintings, portraits, photographs, busts, and other mementos of Darwin, his family and friends, as well as manuscripts including, for example, the notebooks kept by Darwin on the *Voyage of the Beagle*. We were a bit shocked to think of such precious material exposed in this way to the danger of loss by fire.

We went out through the back of the house past a cubby hole under the stairs where it is said the five manuscript pages of the *Origin of the Species*, now in the library of the American Philosophical Society, were found. We saw the famous "wormstone" (for Darwin's report on the "wormstone" see Charles Darwin: *The Formation of Vegetable Mould, through the Action of Worms with Observations on their Habits*) and looked out, over the twenty acres or so which belong to Down House, across the fields to the fringe of woods in which the Sandwalk is located. We walked in the rain past the greenhouse and laboratory, past the kitchen garden, along a high brick wall which supports some espaliered pears and is pierced by two doors, one of which leads to an abandoned tennis court and the other to an orchard, and came to the Sandwalk. Near its beginning is an old oak some seven feet in diameter, and soon thereafter a huge time-scarred beech at least eight feet in diameter and buttressed. Holly and hawthorne hedges edge part of the walk now somewhat overgrown. A stroll from the house through the Sandwalk requires some thirty minutes, and here Darwin was accustomed to take his constitutional. Planes from nearby Croydon Airfield shrieked overhead, but in Darwin's day Down House must have been a quiet peaceful spot indeed, where a man could think without the interruptions and distractions experienced by most of us in these more hectic days. (Anyone interested in Darwin should read the charming book, *Period Piece, a Cambridge Childhood* by Gwen Raverat, a granddaughter of Charles Darwin.)

A dinner with Dr. and Mrs. Igor Asheshov, formerly on the staff of The New York Botanical Garden, at which we spent most of our time talking of antiviral substances, and a most stimulating afternoon with Professor F. G. Gregory, Director of the Institute of Plant Physiology of the Imperial College of Science and Technology, completed our stay in London—with the exception of a bit of London sightseeing and the theatre.

From London we went on to Manchester, as I wished to visit the active Department of Botany at the University of Manchester, even though I knew Dr. C. W. Wardlaw was in the United States and Dr. A. Allsop was on vacation. I met Dr. Waring, who is interested in the problem of juvenility in trees, and some of the students who are investigating the growth of excised roots. Trips to Nottingham Castle, and to Chester with its extensive walls and curious arrangement of shops on two

(Continued on page 14)

Charles Darwin's study at Down House

The Irish Have a Way With Roses

By **Sam McGredy**

The following is based on the speech Mr. McGredy made before the annual meeting of the American Rose Society, Portland, Oregon. June, 1956.

WHEN I BEGAN TO THINK about Ireland and its roses, I began to realize how crazy the Irish really are. Our climate is just about the most fickle to be found anywhere. The super-abundant moisture which is a feature of our climate, is one of the heaviest handicaps we rose growers have to contend with. In fact, were it not that nature has here, as elsewhere, adapted the country to the climatic conditions which prevail, rose growing in the north of Ireland would be well nigh impossible. But the country is for the most part hilly or gently undulating, with abundant natural arteries for rapidly drawing away the superfluous moisture so that our plants do not get water-logged nor our soil soured with stagnant moisture. "For the rain it raineth every day," is almost literally true, and the consequent humid atmosphere, although conducive to abundant growth, makes the growing of the thinner-petalled varieties a matter of the greatest difficulty.

The average temperature is low, and the rawness of the air even in the growing months with the ever-present humid atmosphere makes one sympathize with the Frenchman, who described our climate as "nine months winter and three months very bad weather."

Even in a period of drought in mid-July you can, in the early morning, wash your hands on the foliage of the roses. That these heavy night dews are of great advantage to the growth of the plants and assist the development of the bud is quite true. They also enable the Irish grower to enjoy a longer period of bloom, but the difficulty of preserving the flowers of pale-colored varieties which normally have thin petals is at times rather disheartening. It is for this reason that the floribunda class is making terrific strides in Ireland.

As you may know, Ireland is divided into two countries. The Southern Republic has a much drier climate most suitable for rose growing, yet it has never contributed anything to the rose world. The major nurseries are to be found in one small corner of the north-east within forty miles of each other. This part known as Northern Ireland is British and, contrary to general opinion amongst the Irish in Chicago and New York, we are very proud of that fact! As a race we are predominantly Scots-Irish—and the industry of the Scottish race probably accounts for the rose nurseries being found here, as rose growing could never be described as an easy occupation.

It is even more peculiar that Northern Ireland has become so famous for its rose creations. The drier climate of southern England is much more suited to hybridization than our own. Even with the aid of glasshouses it is difficult to get seed to ripen before winter sets in. Now the national joy of all Irishmen is to pull the legs of the English, and it gives us great satisfaction that eighty per cent of the roses fondly known in Great Britain as typical English roses were raised in Northern Ireland.

Against all these summer troubles of climate, we are blessed with a very mild winter. They are so mild that roses go into dormancy very late in the year and start growth again early in the spring. 10° F. of frost is very rare indeed. Consequently, hilling up is unknown in Ireland. When you think that our latitude is more than eight hundred miles north of yours here in Portland, we are in many ways very lucky.

My home town is called Portadown. Situated some twenty-five miles west of Belfast it is mainly connected with the linen industry, and most of the eighteen thousand population work at some stage in the production of Irish linen goods. In the outlying areas, rose growing and apple growing are the major occupations. Like all the advertisement posters, the countryside is wonderfully green. Little white-washed cottages with thatched roofs are very common and while the mark of television can now be seen, the older women still stick to their black shawls and the men to their white clay pipes. As is well known, feudin' and fightin' are the natural leisures of the Irish; and when we are not busy fighting amongst ourselves, we turn on our neighbours in the Irish Republic, and very occasionally we join together to annoy the English. In most parts of Northern Ireland the dialect is very Scottish, and nowhere do you find the typical brogue of the Hollywood movies.

Most of the land around Portadown was given to the English lords, as gifts for faithful service, in the early sixteen hundreds. One of these lords was named Obins, and he built himself a castle which was demolished during the eighteenth century.

Surrounding the castle a field of ten acres, which supplied the tenants with vegetables, was known in the town as Castle Gardens. This is part of our present nursery, and we have the Castle incorporated with a rose and shamrock in the family coat-of-arms. Consequently, our nursery has been associated with gardens and gardeners since the seventeenth century. At the beginning of the nineteenth century, the land passed into the hands of a nurseryman called Grant. He built up a small local business in bedding plants and built one small propagating greenhouse.

My great-grandfather, Sam McGredy I, was at this time head gardener to one of the aristocratic English families still living in the town. When Sam II joined him as assistant, they decided to start a nursery on their own and the Grant nursery was bought in the late 1860's.

This ten-acre field with its one little greenhouse was the beginning of the McGredy rose tradition. Two or three years ago, when doing repairs to one of the cottages on the nursery, we came upon the cobblestones of the old castle courtyard still in perfect condition under the floor boards of the house.

The first greenhouse was pulled down only last year to make way for a modern one. The panes of glass were about six by nine inches against our modern twenty-four by twenty-four inch glass. An old tunnel from the castle still runs underneath our land to disappear somewhere in the center of the town.

In the early days the McGredys were not interested in roses. Sam I was very fond of pansies and gained fame for these at shows as far apart as Dublin and Edinburgh. These flower shows are a peculiar feature of the British nurseryman's life. Here in America the customer buys from a lavish catalogue or, after visits to gardens such as yours here in Portland, he contacts his local nurseryman. Not so in Britain. Our customers visit their local flower show and place an order with the visiting nurserymen there. Consequently, my own firm does some forty flower shows a year all over Great Britain, exhibiting anything up to six thousand blooms at each show. The gardeners prefer to see the roses before they place an order and take a very sceptical view of any catalogue.

Traveling around these shows Sam II became interested in roses. At that time the hybrid perpetuals and teas were all the rage. Neither of these types was really suited for our climate. The hybrid tea made its appearance, and Sam II saw in this type a rose ideally suited for the Irish garden and decided to devote his life to its improvement. The McGredy hybridizing was done on a large scale from its start in 1897. Perfection of form and novel color were the quests. The first gold medal was obtained in 1905 for a mammoth pink H. T. called 'Countess of Gosford.' Since that time some seventy National Rose Society gold medals have been won by the family for new roses and many hundreds more for their exhibits of roses. Not content with raising ordinary hybrid teas, grandfather used numerous species including *R. rugosa, cinnamomea,* and *foetida* in his search for something new. This research paid rich dividends as two of the most famous early varieties, 'Old Gold' and 'The Queen Alexandra,' had one or more of these species in their make-up; and all the subsequent McGredy novelties go back to these two varieties.

'The Queen Alexandra' was, indeed, a sensation. It was the first red and yellow bicolor ever seen, and when Queen Alexandra saw it at the National Rose Society Show in 1917, she asked us specially to name it after her.

Even in those early days the Irish were a force to be reckoned with, as in the 1913 audit of the best roses of the National Rose Society over fifty percent were Irish introductions. Incidentally, the German 'Frau Karl Druschki' headed the list, and the old American E. S. Hill novelty 'Mrs. Theodore Roosevelt' was consistently in the top twelve.

Grandfather's rise to fame was quite phenomenal. By 1926 he was the undisputed Rose King of Europe and was known throughout Britain as "The Irish Wizard." His new roses gained first prizes consistently at every show in Britain against the best England could produce—no mean fact when you think that they had to be cut many hours before the English blooms to reach the show in time.

Many stories are told of him at these shows. The Irish have a great knack of getting other people to do the work while they sit around and watch. Sam II was no exception; he used to sit on a box at these shows directing his amateur friends and even nurserymen who were competing against him, while they staged his new varieties for him.

Before his death in 1926 he had raised a multitude of new varieties, some of which are still to be found in our gardens today. Some of these are 'Mrs. Henry Morse,' 'Mrs. Chas. Lamplough,' 'Mrs. A. R. Barraclough,' and 'Margaret McGredy,' named after his wife. Margaret is still alive today and full of wonderful memories of the old days, when the nursery was still a small place and every inch was dug by hand.

A seedling from 'Margaret McGredy' and another McGredy rose, 'Charles P. Kilham,' gave Meilland his wonder rose 'Peace' in later years.

I think my father was even more of a rose fanatic than his father. A big man in every way, he carried on the business even more successfully. He was full of Irish "blarney," and his ability as a speaker spread the fame of his roses' far and wide. He visited the United States in 1934, and it was at that time that Jackson and Perkins and McGredy's became acquainted with each other.

Whereas Grandfather was mainly interested in raising roses of perfect form, Sam III went for colour in his hybridizing, and it was really in his time that the McGredy roses became legend. 'McGredy's Ivory,' 'McGredy's Scarlet,' 'Night' and 'McGredy's Yellow' were a few of his creations. By far the most famous of all his roses, however, was the rose named after my mother, 'Mrs. Sam McGredy.' Still our biggest seller after twenty-five years, 'Mrs. Sam' has no equal for its salmon-scarlet coloring in Great Britain. Funnily enough, Father had rejected this variety, but Mother insisted that it was the one she wanted—a case of woman's intuition.

Unfortunately, Father was not spared to go on to greater things as he died suddenly at the early age of thirty-eight, when I was two years of age. I must be excused if I pay tribute to a man I never knew, yet have come to love and respect. He was a generous man who left many friends, but more important he did the supreme thing—he left the world a more beautiful place to live in. 'McGredy's Sunset,' 'Picture' and 'Rex Anderson' were all seedlings of his, introduced after his death. 'Picture,' I believe, is still very popular in California.

In the years that followed, my Uncle Walter Johnston carried on the business. It was during this period that the firm really got its roots in the ground. A natural flair for business and a genuine love of roses, Mr. Johnston had the honor of being behind our All-American winner 'Rubaiyat.' 'Panorama' and 'Cynthia Brooke' are others of his era.

By far his most difficult task, though, was to steer the nursery through the war years. In the years 1938-39 people would not buy roses, and many plants went unsold. Onions, peas, and celery took the place of roses after that. The growing and marketing of these crops using special machinery was an awful headache.

We were probably slower than any other country to get over the effects of the war. We buy our stocks normally in Holland, and these were unobtainable for many years in any quantity. Our hybridizing house had been changed over to tomato production; consequently, our whole strain for breeding was lost forever.

(Continued on page 14)

BEGONIAS
ARE FASCINATING HOUSE PLANTS

By Marian W. De Coursey

BEGONIAS probably owe their fascination for so many house plant growers to their beauty and to their endless variety. This variety in this comparatively new and large genus is so marked that begonias have been nicknamed the "mimic plants:" the rose begonia, the peach-leaved begonia, the elm-leaved, the plum-leaved, the *aconitifolium*, the *fuchsioides*.

Although discovered by Charles Plumier in 1690 and established in Europe as a new genus in 1700, it was not for a good many years after that that begonias came to popular notice; not until the erection of stovehouses and greenhouses made it possible for growers in Europe and the United States to winter these inhabitants of semi-tropical conditions and not until the discovery of the Wardian case made it practicable to transport living plant material for long distances. The discovery of the rex begonia in 1857 in Assam gave a great impetus to the distribution of begonias. Every collector wanted one of these beautiful, silver-banded novelties and then, as now, it is only necessary to grow one species to want to try another and another. A very few begonias do not survive out of their native habitats, or are too big for even a large greenhouse, or are just too ugly; but by and large the members of the genus offer much of interest in leaf, flower, and detail.

When Plumier discovered these fine ornamental plants in the West Indies and introduced them to European horticulturists, he was attached to the staff of Governor Michel Begon of San Domingo as a scientific explorer. Since the earliest times men have experimented with plants new to them for food and medicine, and after the introduction into Spain of quinine, a specific for malaria, by the Jesuits in 1630, interest in European countries was stimulated by the possibility of finding in the largely unexplored Americas another plant of such value; so most officials were accompanied to their posts in the New World by scientists who sent back interesting and unusual plant material to their countries to be evaluated.

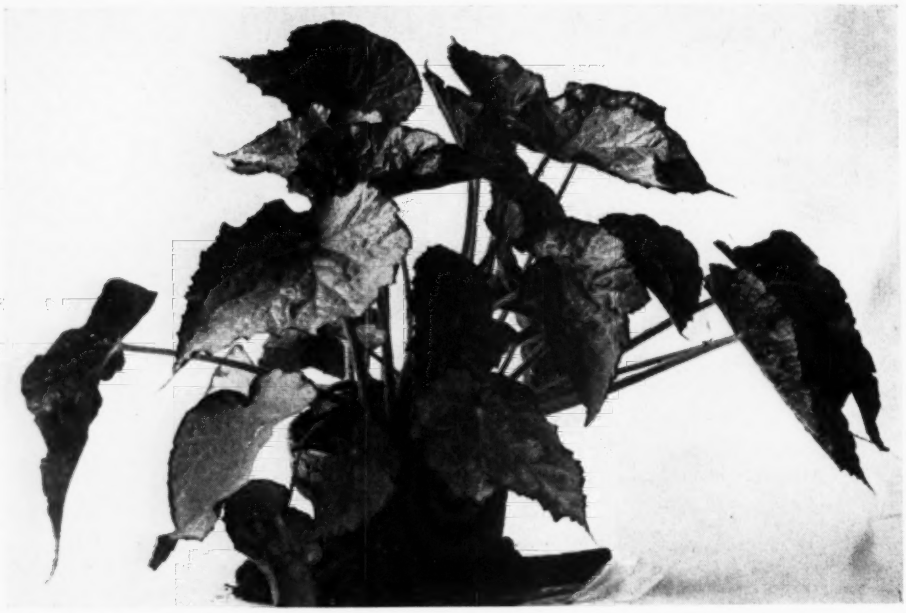
Begonias never became useful as food nor as medicine but were introduced to Europeans by such scientists, sea captains, and finally by plant explorers sent out by commercial nurseries and by such gardeners and collectors as Sir Hans Sloane and Sir Joseph Banks.

'Annabelle,' a derivative of *B. maculata*, is a very strong-growing, upright plant reaching six feet in two years under house culture. The leaves are a fresh bright green, conspicuously silver-spotted. The author's plant, blooming this autumn for the first time in four years, bore pale pink, medium-sized flowers in pendulous clusters. 'Annabelle' was developed by Chauncey Vedder in California in 1922.

Sir Joseph Banks' interest and readiness to finance expeditions attracted volunteers who sent him material from all parts of the world, and we should think of him with gratitude for his efforts in popularizing gardening among all classes of society. Sir Joseph introduced several begonias discovered by his collectors.

It is estimated that there are more than a thousand species of begonias; and since begonias cross easily, there are now more hybrids than can be counted. The earlier hybrids were the work of commercial growers in Europe and the United States, but lately a number of the new hybrids have come from amateur enthusiasts. Many of the crosses are beautiful, of course, but hybridizers keep too many which too closely resemble each other or earlier known begonias. It is getting very difficult to recognize which hybrid one is growing and to report accurately how a named hybrid is responding to one's growing conditions. The American Be-

Begonia prunifolia, one of the most satisfactory of the hirsute begonias, is beautiful in and out of bloom. This hybrid, raised by A. D. Robinson in California in 1922, has both pink and white-flowered forms. A medium and erect grower, the whole plant is densely hairy.



Begonia 'Sir Percy' was hybridized in California and is a medium-sized rhizomatous plant which flourishes with no particular care. Like many of the begonias with silver-colored leaves, it does not require sun. The leaves are held up on strong petioles and often turn a little to show their red undersides.

gonia Society, recognizing this problem, is urging its members to name and distribute only such plants as are a distinct improvement upon or have marked variations from already known varieties. Besides species and hybrids we have cultivars which I understand to be crosses between a species and a hybrid or between two hybrids; for most amateur growers, cultivars may be treated as hybrids.

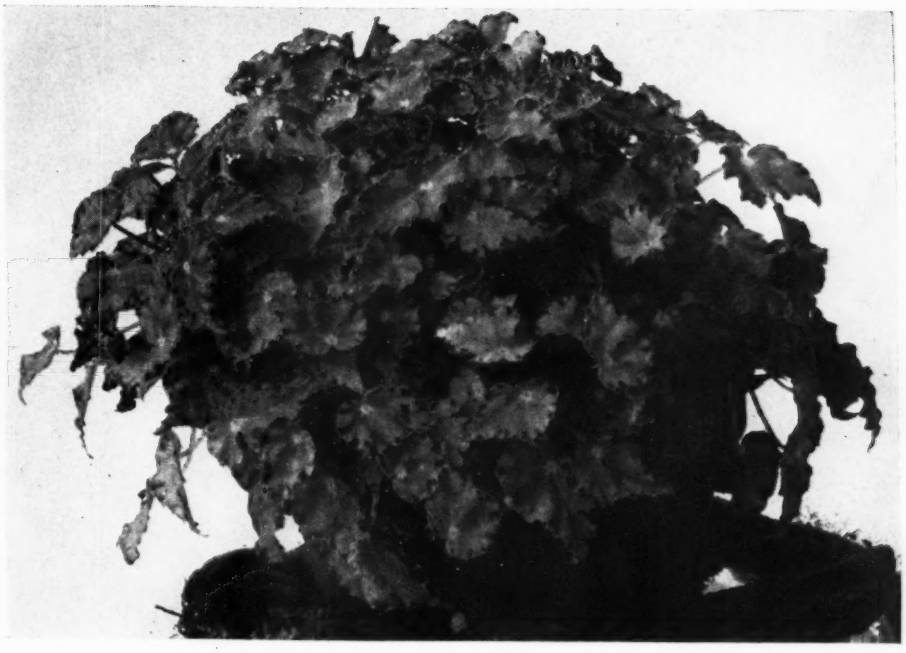
Since begonias are such "mimics" of other plants, it might be helpful to have a few guideposts to help us recognize the genus when we meet it in a greenhouse. Two plants most commonly mistaken for begonias are the "strawberry begonia," *Saxifraga sarmentosa,* and the "watermelon begonia," correctly a *Peperomea.* A botanist would identify a genus by its habits of reproduction, but since begonias are not always in bloom and this method requires a good deal of knowledge, we can get along very well with some very simple characteristics. First the flowers, if the plant is in bloom, occur in cymes (a flat cluster); each cyme contains both male and female flowers which, however, bloom at different times — the males first and the females later. The males generally have four petals, two larger and two smaller, with stamens held erect and prominent; the females have small flowers, which open as the males drop their petals, but they often seem larger as the inferior ovary is large and frequently beautiful; the ovary is generally three-winged and varies in color from pale green to deep pink. Each cyme springs from the axil of a leaf. The leaves are always alternate which is easy to see; less easy to see on a short-noded plant is that the leaves are two-ranked; young leaves emerge from a stipule, an enclosing sheath which varies in color and texture. Some stipules are very long lasting, some are hirsute, others are paper thin, many are delicately colored and add greatly to the appearance of the plant. As a rule, all the main veins of a leaf meet at the sinus. The leaves are never symmetrical and on the most casual examination it is obvious that the two sides of the leaves are unequal. No one of these characteristics will identify a plant, but if a number of them are present the plant is probably a begonia.

Species of begonias have been found round the world, both north and south of the equator and in both hemispheres; always in soil rich in humus, with sharp drainage, and in high enough altitudes so that they experience a sharp drop in temperature as night falls. To have them thrive in our homes, we must attempt to reproduce these conditions as nearly as possible. The soil mixture is not too hard to provide, the sharp drainage can be arranged, we can lower the temperature at night; the only problem is that of creating enough moisture in the air around them. This is such a familiar problem, well coped with by so many, that I shall not go into detail about it — you all know about pebbles in water, damp peat moss, and double potting.

From China we get two valuable begonias: *B. Evansiana,* which is the only begonia hardy out-of-doors as far north as Philadelphia, and *B. cathayana* with its lovely velvety texture and fine coloring. *B. Evansiana* is the only begonia I have listed from Japan. From the island of Socotra comes *B. socotrana,* a parent of the hybrid Christmas begonia; on the very dry island off the coast of India which is its home, *B. socotrana* has cupped leaves to conserve every drop of water. In our climate the cupped leaves tend to rot, so they have been bred out of the plant, but every now and then we find on a Christmas begonia a cupped leaf. Madagascar, Sumatra, Java, the Philippines, and India all have native species that we grow; Africa has contributed some of our favorites. Skipping across the Pacific we find begonias native to most of the countries in the northern part of South America. Brazil has the most, at least twenty-eight, and Mexico is the next richest with seventeen. Maybe these figures are outmoded, as begonias are being introduced from time to time. The West Indies, Puerto Rico, and Jamaica each furnish a few species.

The most fortunate amateur growers have a greenhouse, some an enclosed porch, but most of us grow quite respectable plants on window sills. A number of house plant growers have told me that they would grow begonias with joy, if they had enough south windows; however, one of the virtues of the genus is that all its members do not prefer, nor are all even willing to put up with, a south window. The rexes, whose older forms are hard to grow in the house, will do much better in the good light of a north window out of the sun; most begonias with deep red or deep green leaves have a much deeper color and a finer sheen, if they are grown in a north window. They do appreciate a sunnier spot when they develop buds and while they flower.

If I could have only one exposure for begonias, I would choose an east



Begonia Boweri was discovered in Mexico about seven years ago. A little particular about sharp drainage and no draughts, it makes an appealing pot plant because of its applegreen leaves with dark blotches and hairs on the margins. In March its quantities of pink flowers are held well above the foliage.

window for it seems to me that begonias prefer the morning sun. Save the south window for the semperflorens, the manicatas, and any begonias which, like *B. Scharffii,* 'Dianna,' 'Di-erna,' and any hybrid of *B. dichroa,* tend to bloom repeatedly through the year. In the west window I put all those that I can't accommodate in the east window.

Nearly all begonia amateur growers water their plants too freely. Not only do the roots need water and moisture, but they crave air; water the plant until all the soil is wet, pour off any excess water in the saucer, and let the plant get quite dry, then repeat. No routine can be laid down as to how often to water for small pots dry out faster than larger ones; in a warm house the plants will use more water; in a short stretch of warm days they will dry out more quickly. It is interesting in the Wm. Penn Branch of the American Begonia Society, to which I belong, to note how different are the procedures of our members and how even are the results. I like to water and to feed my plants, but my results are not better than those of my friend, Mrs. Ernest C. Drew, who doesn't feed in winter and waters sparingly. Four years ago we each started with a cutting of *B. Boweri*: I had a fine looking plant the first year, the next year mine rested and Mrs. Drew had a lovely specimen; my plant revived the following year and hers rested. We can't account for it. Is it any help to have a stone house? Our house is stone; Mrs. Drew's is cinder block and stucco. I can see a difference in plants grown in a greenhouse from the ones we work over; but of our eleven members who grow on window sills, each has a few outstanding successes each year no matter what her house is built of. I do think that my choicest plants do especially well in my bathroom. Cuttings that I start before Christmas, little plants that I cherish, flourish in the moist air of the bathroom. Even without a range with a steaming kettle on it, my kitchen is the next best room for a begonia to find itself in.

Though I enjoy the lovely foliage of the plants, I very much prefer giving house room to those species and hybrids which are going to bloom during the months when I cannot garden outdoors. Over a number of years, Mrs. Drew has compiled a list of winter-blooming begonias from reports of Begonia Club Circle No. 4 (at that time the membership of that corresponding Circle extended from the New England States to Ohio), from the A.B.S. Branches Wm. Penn and Philobegonia, and from her personal records. Because I believe that many growers share my desire for bloom indoors, I am including the list in this article, with Mrs. Drew's permission, and with a few additions of my own. Because many begonias bloom for more than one month and some repeat, I am listing them in order of their bloom, starting October. Here, around

(Continued on page 12)

'Thrush' is a recent Rex-c. hybrid, but seems to have inherited nothing but good points from both parents. The reddish leaves are liberally sprinkled with fine silver dots and hardly need the lovely pink flowers to make an outstanding begonia.

A ten-year old seedling of *Punica Granatum* var. *nana,* with fruit, grown as Bonsai; and a one and a half year old cutting as pot plant

Spironema fragrans is a fine subject for a large strawberry pot, as the runners can be anchored to the pockets

THREE EASY HOUSE PLANTS

By **Marjorie Wihtol**

THE WORLD IS FULL OF a number of things, as the man said, and some of the nicest of these are house plants. Find a house or apartment that does not have one or several plants growing in soil, sphagnum, water, or Junior's marbles, and you will have discovered a family who is either never at home or, when it is, wishes it wasn't. And yet, unhappily, the plants that are usually seen in even meticulous homes are of an untasteful sameness, a dreary go-round of cobwebby ivies and philodendrons, dime-store pot-boilers, or expensive productions from expensive florists. This isn't necessary, as there are many, many plants which will adapt themselves with varying degrees of content to indoor conditions and culture. All over the world interesting new hybrids are continually being developed; and forgotten favorites, such as, a few years ago, the crossandra, are being re-introduced to enjoy a new moment of popularity. The ancient Japanese art of dwarfing hardy trees (Bonsai) is beginning to be understood and appreciated in our country as more information and literature on it becomes available, and this type of culture provides unique opportunities for patio and porch-decorating, for these little trees must remain outdoors in their pots through the winter.

I have always enjoyed that discursive game where the players chose a single specimen of various categories that they would take with them to a desert island. A favorite painting (Rembrandt? Picasso?), a book (Shakespeare? Wolfe?), a recording (Bach? Presley?) a food (meatballs? strawberry milkshake with dill pickles?), etc., and ad inf. Recently I recalled these nonsense-debates as I stood before my favorite horticultural character, a plant in a pot, and knew that this indeed would be my selection from the plant world to lug along to that hypothetical island. It is a versatile and attractive treelet, a dwarf pomegranate, known to the knowing as *Punica Granatum* var. *nana.*

This name leads me off onto a parenthesis, for my early cuffs with D'Ooge's Latin Grammar impressed upon me that gender endings should match, and it does seem that some early horticulturist blooped here . . . but perhaps I've forgotten my genitives and datives. I am led further into this "us-a-um" confusion by wondering who bestowed gender upon plants; who decided the lovely hibiscus to be male, and oncidiums and begonias, both, in their way, possessed of two sexes, to be neuter and female. And then . . . have you ever noticed? . . . most male gardeners call their plants "she," while women call theirs "he." This way lies madness; or should I say dementia (fem.)?

And so back to punica. In 1946 I planted a packet of seed of this shrub in our greenhouse, and then I must have lost the tag and eventually dumped the flat into the bench. A year later one of the forgotten seeds germinated and an unfamiliar plantlet appeared; I potted it and tended it with care, as the unknown intrigues me. It was a finely built little thing, of upright growth, with tiny oblong leaves of a shining light green. When, at only a few months of age, it produced several inch-long, nodding, brilliantly orange-red flowers . . . and for Christmas to boot . . . I was enchanted.

For several years punica was a mystery plant. Many surprisingly wrong identifications were made of it, and by experts . . . newspapers and magazines which have departments for just this purpose. Finally, a cutting sent to the Bailey Hortorium in Ithaca was immediately identified by Dr. Bailey, and at last my little plant had a name. That year we took it to the county 4-H fair and set it up as a guessing game with rooted cuttings as prizes for correct guesses; nobody won. That fall I set the original plant out in the garden, and, though it is described as not hardy in the north, it lived healthily for several years with no winter protection, behaving deciduously and flowering in the late summer. When we moved a few years later, I dug it and found it to be such a shapely little tree that I put it into a bonsai pot. It settled down in the greenhouse to year-round blooming and the production of a single small fruit every fall. Recently it has developed a trunk of about three quarters of an inch in diameter, complete with bark, and has sent its roots over the top of the soil in the best oriental tradition. When treated as an ordinary pot plant it is shrubby, covers itself with flowers, and yields more fruit. It roots easily from cuttings and comes equally easily from seed. In a house it does not bloom as constantly as under glass, but if set outdoors in the sun during the summer, or planted in the garden and dug in the fall, it will bloom in a sunny window until after the holidays. A most delightful fellow, punica.

I confess to a touch of kleptomania, and if a trip comes my way I take along a large can of rooting medium, a jar of hormone powder, and an import permit if I am going out of the United States. Perhaps even a small pair of scissors, and surely a carefully filed and sharpened thumbnail. For sometimes I cannot resist . . . well, "borrowing". . . a tiny slip of some intriguing plant. An extremely moral and upright English gardener, whom I have known all my life, offered me an acceptable philosophy on the subject of getting cuttings, which I have made my own. It is this: "If you can buy it, buy it; if you can't buy it, beg it; if you can't get it any other way, then take it, *provided it doesn't hurt the plant*." He told me this while walking through acres under glass at a famous garden, and I was delighted to notice that his tiny and equally virtuous wife had her pockets abulge with African violet leaves! I have felt so much less paranoid, since I have found that this most honorable of men is in at least semi-sympathy with the delicate art of snitching cuttings.

For plants are living souvenirs of friendships, places, and events, and I am the fortunate owner of many such . . . some "borrowed," some given, some even bought! . . . from many places. There is a most beautiful white gloxinia, a leaf of which was given me by a

Spironema fragrans growing at the front of a bench in the author's greenhouse at Middletown, N. J., with a background of begonias including *B. ulmifolia, Kellermannii, maculata,* 'Decker's Select,' and a *superba* hybrid, *Oncidium sphacelatum, Cissus discolor,* and other plants

waiter at the Schweizerhof in Lucerne, where the public rooms and staircases were massed with the lovely things in all colors. There are tuberous begonias rooted from cuttings received in Holland, where they are grown by the acre near the canals, in full sun. There are oleanders that were planted in the Roman Forum by Mussolini; and many other plants whose sight sends our family off into attacks of "Do you remember . . . ?"

In 1950 in Guatemala, my thumbnail happened to brush by a small hanging plant and came away with a slip the size of a tooth-pick. By the time we returned home it was well rooted in the tin, and somehow the delousing of the Plant Quarantine folk failed to kill it. It is *Tradescantia foliosa,* a tiny member of this tribe, with delicate small leaves and white bloom. I planted it in a bench in the greenhouse, and it set about taking over so thoroughly that I must remove wheel-barrow loads of it several times a year. I throw it on the garden as a mulch, and almost as soon as my back is turned it has rooted there and become an attractive groundcover. Most visitors ask for a start of it and go into shock when I give them a double armful. It is a most durable thing and, though not winter-hardy here, it will grow in sun or shade, wet or dry, pampered or abandoned. It will grow up, down or sideways; the only thing it hasn't tried is being a tree, and I wouldn't be surprised if it made that some day. Now there is a pot of it in nearly every home of my acquaintance; other plants come and go, but this one remains. Recently I saw it growing in a half-cocoanut shell which had been drilled for drainage and suspended from the ceiling; the plant was both hanging to the floor and scrambling up the wires. It was charming.

Another beguiling member of the tradescantia family, and one which also thirves on underprivilege, is *Spironema fragrans.* Dr. Bailey in his *Standard Cyclopedia of Horticulture* makes the same observation that I have made; that it is often seen in European botanical collections but that "it is little known as a horticultural subject." It is odd that we do not see more of it in this country for, as a native of Mexico, it is a close neighbor to us. In the great palm house at Schönbrunn near Vienna it is grown in the ground beds as a cover, and I have seen it so grown in several botanical greenhouses in this country, which is a pity, as its hanging potential is not realized. Dr. Bailey goes on to quote the *Botanical Register*: "The plant will be cherished because its thin and delicate tissue allows the hidden motion of its fluids and the subtile texture of its fructifying organs to be watched with ease and pleasure." I'm not sure I enjoy quoting Dr. Bailey quoting the *Botanical Register,* as it sounds shockingly like "Peeping Tomism." But one thing's for sure — that olde English word "subtile" hit it right on the nose; if any plant could grow under the bathroom floor, this is it! Wherever a bit of it falls, there it roots and flourishes; between the cracks in cement, among dry pebbles of unused benches, in the dark behind things and in the dank underneath things. Kicked around and trodden for weeks, an odd chunk of it tossed on the compost pile promptly latched on and covered it in a short time. This critter can't be licked!

Indoors spironema does admirably and will grow within bounds for some time before crowding humans and furniture out of the house. It's a fine subject for decorating, either in pots or in arrangements, as its large-scale body develops interesting forms and attitudes, sometimes growing upward and sometimes reversing itself and hanging, just as attractively, upside-down. When grown in full sun, the foliage takes on a sort of pale transparent appearance which may have been the cause of the observation quoted above; but under other conditions it remains a rich dark green. From low on the main stem grow long thick runners which produce new plants at their tips which root if allowed to touch soil . . . and even if they're not. It is a fine subject for a large strawberry-pot, as the runners can be anchored to the pockets with clothes-pins, and in a short time a dramatic jungle will result. The bloom is unsightly and unwieldy and looks like a long skinny asparagus stalk tipped with tiny white flowers, which are hardly fragrant enough to justify the name, *fragrans.* If it blooms under house conditions, which is unlikely, the stalk might better be removed.

All three of these plants are utterly easy to grow, and I have never known them to have disease or pest. Given ordinary soil and care, they should last indefinitely, reproduce themselves with enthusiasm, and crowd that mangy old poinsettia right off the mantelpiece.

BEGONIAS **(from page 9)**

Philadelphia, we must bring our plants into the house about the middle of September to lessen the shock of moving. In September the windows can be left open a great deal, the furnace has not yet been turned on, so the plants get acclimated before the difference between out-of-doors and house conditions become too accentuated.

In order of bloom, starting October

B. prunifolia
'Jinnie Mae'
'Di-erna'
'Dianna'
B. rubra
'Annabelle'
'Interlaken'
'Thrush'
'Neely Gaddis'
B. Croftoni
B. Digwilliana
B. Drosti
'Green Berry,' rex
'Gretchen'
B. Hugelii
B. illustrata
B. incarnata
'Manda's Woolly Bear'
'Marjorie Gibbs'
B. Melior
B. nitida var. *odorata*
B. rosea gigantea
B. rubra odorata
B. subvillosa
'Winter Jewel'

After Christmas

"Angel Wing," syn. *B. coccinea*
'Bessie Buxton'
B. cheimantha, group name for *B. socotrana X B. Dregei* hybrids
'Dorothy Grant'
B. erythrophylla
B. floribunda rosea
B. Kellermannii
B. Limminghei
B. manicata aureo-maculata
'Orrell'
'Marian'
'Paul Bruant'
B. phyllomaniaca
'President Carnot'
B. Rex
'Tea Rose'
B. Templinii
B. Dregei
B. Boweri
B. erythrophylla helix
B. incana
B. maculata
B. manicata
B. nitida
B. Sunderbruchii
B. Crestabruchii
'Joe Hayden'
'Luwalter'
'Marjorie Daw'
'Mrs. Fred. Scripps'
B. oadi
B. picta rosea

B. roezlii
B. Rossii
'Tamo'
B. alnifolia
B. weltoniensis

March
B. Bunchii
'Elsie Frey'
'Guinea's Wing'
'Immense'
B. venosa
B. viau-Scharff

A few begonias have the attractive quality of resting in the heat of summer, when I am more interested in my outdoor garden, and giving repeated bloom during the winter months. *B. Preussen* is in a class by itself, for it does not even stop in the summer; there are many accounts of plants of *Preussen* blooming two or three years without stopping. The first and best plant that I had of *B. Preussen* was never without a flower for three years. As I look back, I wonder if that wasn't before the mildew came east from California where it was epidemic and weakened many plants which are subject to it. Mildew does not seem as troublesome now as it was two years ago; let's hope it will wear itself out and cease troubling some of our most charming begonias. Spraying with "Mildex" or "Iscothan" once a week will often prevent mildew on plants susceptible to it—start in August before the damp days of autumn.

Preussen, 'Sachsen,' 'Rubaiyat,' 'Di-erna,' 'Dianna,' *Scharffii, Schmidtiana, viaudi,* 'Thrush' and *Lucerna* may bloom at any time of the year. *Preussen* and 'Sachsen' were grown from German seed; 'Rubaiyat,' 'Di-erna' and 'Dianna' are *B. dichroa* derivatives, generous with their rose-colored flowers; *B. Scharffii* is one of the oldest and most satisfactory of the hirsutes; *B. Schmidtiana* is said to bloom even more continuously than *B. semperflorens*; *B. viaudi* is a strong-growing hirsute with most delicate white flowers, and *B. Lucerna* is probably the best known of the "Angel Wings."

Since more people are raising plants in less space nowadays, the hybridizers have worked to produce smaller and tougher plants with great success. 'Thrush' is a charming small plant which blooms very freely; many of the red-leaved, silver-spotted plants are delicate, but 'Thrush' looks delicate and demands no extra care. *B. Mazae* and *B. Boweri,* which are both fairly recent introductions, have desirable hybrids.

NEW JERSEY BONSAI

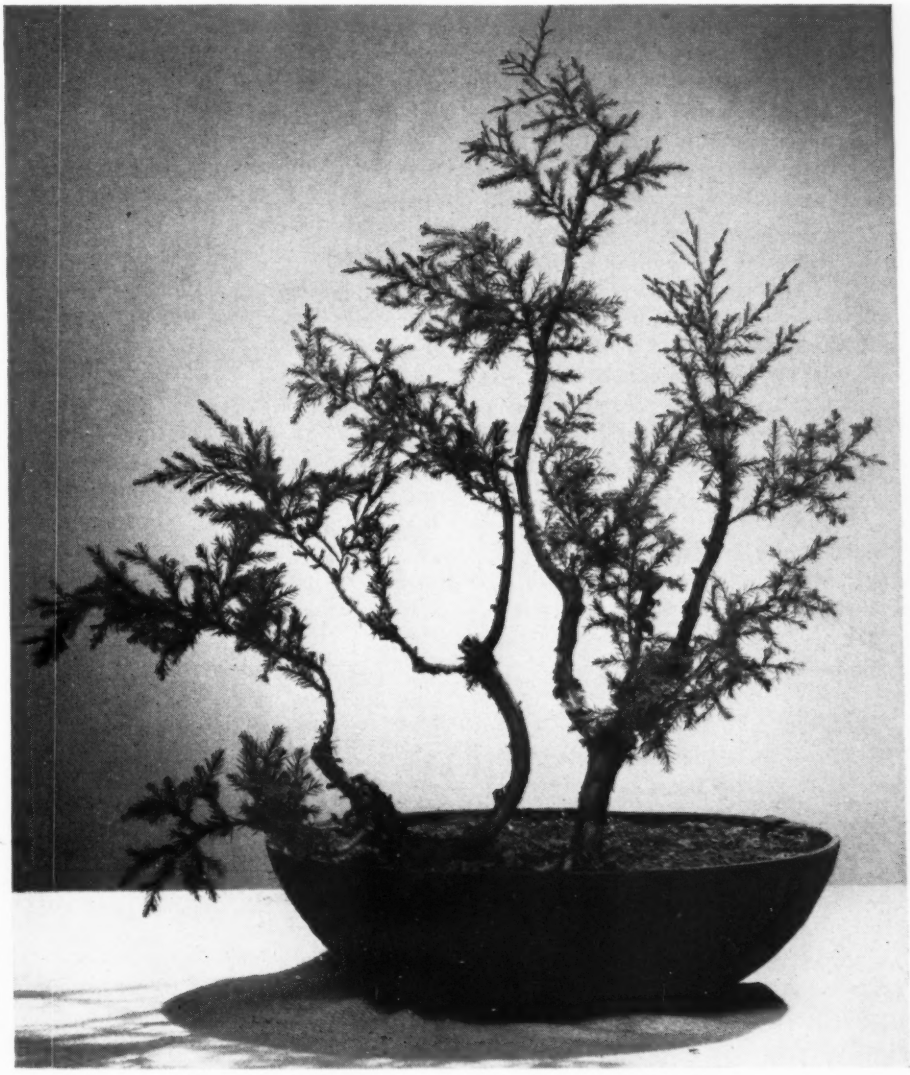
By Rose B. Houskeeper

Reprinted, with permission, from the Sept. 1956 issue of the Bulletin of the Garden Club of America.

AT OUR March 13 meeting [of the Garden Club of America] Dr. John L. Creech, President of The American Horticultural Society, Washington, D.C., spoke on "Japanese Plants, Wild and Cultivated." After the meeting I told him my little story, and he agreed that what I had was certainly in the nature of a bonsai.

This is what I told Dr. Creech. Along the highways, along country roads, grow shrubs and trees of many varieties. Since these often obscure the view ahead, they are kept drastically mowed down. Mostly a heavy blade projecting from a tractor is used. Year after year this cutter passes over the area, but some trees and shrubs are very persistent. They continue to grow, dwarfed and misshapen, putting out new twigs and limbs on the heavy stump which remains from the annual mowing. They have become miniatures in the manner of bonsais, with enormous roots and chunky main stems.

Comparing the boles of the junipers, growing naturally on our property, with the two I dug from the roadside, I would say that these latter, left unharmed, would have been five or six feet tall. Picture then the disproportion of their stems with a height of only eighteen inches! When they were dug I cut down the root system drastically and trimmed the small branches to bring the little trees into an interesting



Two roadside junipers growing in the manner of Bonsai

shape. The vessel in which they are planted, with dirt such as that in which they grew, is the round iron top of an old-fashioned parlor stove. It has a hole in the bottom for drainage. With its raised design and bronzy color it might be a Japanese container. The trees, after ten months, have new tips, fresh and green, and certainly, if looks count for anything, deserve the name bonsai. I shall keep them trimmed to a pleasing shape, letting them become root-bound, and probably in time will find it necessary to prune the root system.

Surely along a country road you might find mistreated trees, evergreens, or even fruit trees, and certainly beeches and birches, which might, with a little of your time, your care and interest, help you cheat the years of the long process which the true bonsais require.

BUSMAN'S HOLIDAY **(from page 4)**

street levels, gave us an opportunity to see something of that part of England.

Edinburgh was our concern chiefly because of the Edinburgh Botanic Garden, unequalled in many respects by any garden we know. The Director, Sir William Wright Smith, referred to by his staff as "The Professor," met us at the main building, and with Mr. Evans we toured the rhododendron walk, visited the lookout over the city, saw the peat garden and rock garden, and then adjourned to his home for tea. Comments on plants, on the history of the Edinburgh Garden and on Scottish history, and recollections of his visit to the United States occupied our time.

Meconopsis was still in bloom; in the rock garden I counted thirty-five gentians, including a hybrid *(Gentiana inverleith)* of the most ravishing blue; noted a New Zealand *Pratia* which had become naturalized in the lawns but could not be grown elsewhere even from divots, and saw growing together in a scree within an area of less than fifty square yards a saxifrage from the Balkans, lewisias from Oregon and California, *Daphne* from Bavaria, a gentian from New Zealand, *Azorella* from Chile, *Helichrysum* from South Africa, *Ilex crenata* from Japan, an anemone from West China, *Moltkia* from Greece, *Dianthus* from Hungary, *Aquilegia* from the Kurile Islands, *Draba* from Siberia, and *Asperula* from Asia Minor!

Mr. Kemp was kind enough to show me a number of fine examples of the effect of cuttings of side branches on the anomolous development of *Cedrus atlantica aurea, Larix leptolepis Kurlensis, Picea pungens Kosteriana, Sequoia sempervirens* and *Abies homolepis* and to point out a number of plants which he thought might be of interest to The New York Botanical Garden.

Visits to gardens in Great Britain always emphasize how wonderful the Gulf Stream is. Because of the ameliorating influence of that warm current plants can be grown in Great Britain which do not survive in New York. Unless you are fully aware of this, it is something of a shock to see, for example, an old madrona tree *(Arbutus Menziesii)* at Kew and *Eucalyptus Gunnii* growing outdoors at Edinburgh.

Before leaving Edinburgh, we visited the house in which Robert Louis Stevenson was born and enjoyed the extraordinary collection of Raeburn paintings in the Edinburgh Museum and, of course, paid our respects to the Castle.

(To be concluded)

ROSES **(from page 6)**

By about 1950 our rose production was back to normal, and I joined the firm after studying in Pennsylvania and at college in Ireland. My first thoughts were for the hybridizing department, and naturally I went to look for past records. Unfortunately, many of these had been destroyed in the wastepaper drive, so I was compelled to start from scratch. With no knowledge of plant breeding, the first couple of years were chaotic!

However, constant observation of the seedlings, such as they were, taught me a lot—and at last I think I'm beginning to get somewhere. For the last two years my seedling production has been around the forty thousand mark, and I'm now starting to hybridize with my own seedlings. It will take three or four years before you will see any of the results, but I look forward to the day when you will have new roses from me as good, I hope, as anything raised by my forebears.

Generally speaking, my aims are much the same as my father's The floribunda is now on the scene though, and over fifty percent of my seedlings are from floribunda or grandiflora crosses. Color again takes pride of place, and I have been pleased to note a pronounced fragrance in many of these varieties.

I raise about a thousand seedlings every year by crossing well-known varieties with some of the original species roses. Now these species are not attractive in themselves, but some have a remarkable resistance to black spot and others have almost thornless growth. The children from these crosses normally look terrible and flower only once a year, but through repeated crossing with these seedlings to selected garden varieties I hope some day to produce roses which are immune to black spot and almost thornless. This wonder rose, if it ever appears, will probably be an umpteenth great-grandchild of the original species. Rose breeding is an exciting business.

CHRYSANTHEMUM CUTTINGS

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In response to many requests, we are planning to make rooted chrysanthemum cuttings available to our members in Spring 1957.

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THE SPURIA IRIS

A PLANT FOR ALL AMERICA

By Marion R. Walker

INTEREST IN GROWING spuria iris is spreading rapidly. This species of iris can be found in the desert gardens of Arizona, in the gardens of California and Oregon. The gulf coast of Texas is one of the most enthusiastic spuria areas. There are spuria lovers in Oklahoma, Kansas, Tennessee, Idaho, and New England. All America is becoming interested in growing this fascinating iris.

About twenty-five years ago interest was aroused in this type of iris by T. A. Washington, who developed what is known as the Washington strain of spurias. Shortly after this breeding work was done, two men on the west coast became interested in growing spurias. The first of these two men, Eric Nies, of Hollywood, crossed the species *ochrolueca* with the variety 'Monspur.' From this original cross came the Nies strain of spurias which gave us 'Saugatuck,' 'Bronzspur' and 'Azure Dawn.' Many other varieties have come from this work by the late Mr. Nies, and the breeding is being carried on in California.

Perhaps the most famous of all spurias is 'Wadi Zem Zem,' which won the Eric E. Nies Award of the American Iris Society in 1956. The award is given to the best spuria in the United States in the opinion of the judges of the American Iris Society. 'Wadi Zem Zem' was produced by Carl Milliken of Pasadena, California.

Mr. Milliken is the only one of the three leading spuria breeders still living. Although he is no longer breeding iris, he is vitally interested in the work being done, and the use of his strain of spurias is aiding materially in the development of new plants.

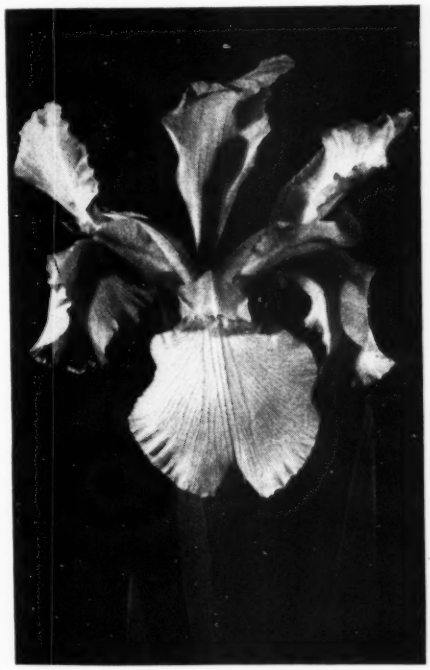
It is interesting to note that breeding work is being carried on by people interested in the various strains developed by these original three breeders. Mrs. Elizabeth Nesmith is working with the Washington strain in New England; Tom Craig, Dr. Phillip Corliss, and the writer are working with the Nies and Milliken strains. Of course, there are many other folks breeding spurias, and it is hoped that new varieties of value will come from all sections of the country.

At this point it is well to note that the Washington strain was developed in a colder, damper climate than the other two. As a result, folks living in the north seem to have better luck growing that strain. Those living farther south will have more success with the Nies and Milliken varieties. However, it is possible to grow all strains in most parts of the United States.

The question probably has come to your mind—how can I grow these fascinating new plants? This is not a difficult question to answer because spurias are easy to grow, if you realize that they are spurias and not tall bearded iris.

The first thing to remember is that the plants will not stand being out of the ground over a long period of time, as will the bearded iris. The rhizome must be kept moist while out of the soil, and it should be disturbed as little as possible while in the ground.

Spuria plants should be moved in late September or early October. They should be planted immediately on arrival and kept moist until they are well established. The top of the rhizome should be placed about two inches under the surface of the ground. The plant should be fertilized according to the practice followed in your garden for tall bearded iris plants. It is unwise to say what should be used without knowing the type and condition of the soil. It is important to have the soil well pulverized and well drained.



'Morningtide,' a seedling of spuria iris 'Wadi Zem Zem,' introduced by Marion R. Walker through Lyon Iris Gardens, Van Nuys, Calif.

Spurias may be grown in full sun or partial shade. They seem to flourish under both conditions. You will find that the plants in full sun will bloom earlier than those in partial shade, thus the flowering season may be extended by planting some in both places. If the plants should develop crooked stems and floppy fans, it is an indication that the plant is in too much shade. This is the only symptom that restricts the use of the spuria in your landscaping.

Perhaps this is the time to say a word about the use of these fine flowers in the garden for cutting. They furnish excellent background material for tall bearded iris or other border plants. These clumps may be left in one place for a long period of time without reducing the excellence of quality desired in the planting. As a result they may be placed in a permanent planting and left undisturbed for a number of years.

In most sections of the country, the spurias bloom after the tall bearded iris season is over. Thus by using them for a background, you extend your iris season another month into late spring or summer.

With the exception of the bulbous iris, the spurias are the most useful for cut flowers of all the iris. They are very adaptable for flower arrangements and make beautiful corsages. This latter use is becoming more and more popular, as the flowers of the spuria varieties become larger and larger through the present breeding program.

What can we look for in the future as far as new varieties are concerned?

The color spectrum is just beginning to open up in spuria breeding. We started with the basic yellow, white, and blue. Later generations brought bronze, chocolate, buff, lavender, and chartreuse. Color pattern and variety of color is becoming more and more di-

(Continued on page 19)

1. Pruning stubs die, prevent healing and encourage decay

TREE PRUNING POINTERS

By T. H. Everett

THE ORDERLY CULTIVATION of trees requires that pruning—the cutting off of unwanted branches and parts of branches—be done from time to time. The reasons why such pruning is desirable are several. Branches may die from lack of sufficient light, from disease or other causes; they should be cut off promptly. Storms may break limbs, and sometimes breakage results from the weight of an extra heavy crop of fruit, another tree falling across the branches, or an auto, truck or bulldozer running into them. Such breakage requires that corrective pruning be done without delay.

Other reasons for pruning trees are to encourage them to form a desirable shape, to remove crossing branches, to prevent the formation of "double leaders" and bad forks or crotches, to "raise their heads" by taking off lower branches, to thin out overcrowded branches and thus assure those left the benefits of adequate light and air circulation, to reduce the size of trees, to remove branches that interfere with other plantings or with buildings, and to restore fruitfulness. The important point to remember is that you should not prune unless there *is* good reason for the operation and unless you are *reasonably* sure that pruning will correct or improve the unsatisfactory condition. Excessive pruning and unintelligent pruning can work as much harm as no pruning, and often more.

Having decided to prune, the next matters to consider are when to do it and the techniques to employ. Actually, trees may be pruned at any time, but it is better to avoid, if practicable, very severe winter weather and the short period in spring when the sap is rising rapidly as a result of considerable root pressure, which means from a week or two before the leaf buds burst open until the leaves are nearly full grown. When the spring sap is in full flow certain trees, notably maples, birches, walnuts and yellowwood "bleed" profusely from newly made wounds. The harm done as a result of this loss of upsurging sap is of no serious importance but the exuding liquid looks unsightly and delays healing.

Now about the "how" of tree pruning, or at least about the techniques of making cuts and protecting them so that healing is promoted. First permit me to express my opinion that pruning involving high climbing, high ladder work or very heavy branches located above easy reach from the ground is no job for an amateur or for the ordinary hired gardener. For those without experience and special skills, such work is too dangerous. A broken arm, leg, back, skull or worse, is simply too steep a price to pay to doctor a tree; for such work hire a reliable tree surgeon. We are concerned here with less ambitious pruning operations.

Clean cuts heal faster than frayed, torn or ragged ones, therefore it is important that all tools be sharp. Saws should, if possible, be of types especially made for pruning and not regular carpenters' tools. The teeth of pruning saws are set wider than those of carpenters' saws, thus making it possible to cut through green wood without binding and sticking in the cut. In many pruning saws the teeth point towards the handle so that the cut is made on the pull stroke rather than on the push stroke. Under most circumstances such saws are much easier to use and are more effective than those

2. When cutting off a branch first make an undercut

3. Then saw through the branch completely with an overcut

4. The falling branch does not tear off bark beyond the undercut

5. The stub is removed by sawing it off close to the trunk

6. Edges of the cut surface are then pared with a sharp knife

with straight teeth or with teeth pointed away from the handle.

When removing entire branches cut as close to the main trunk as practicable, but not necessarily absolutely flush with it. If the branch flares (thickens) rapidly and conspicuously close to where it joins the trunk the cut may be made an inch or so outward from the plane of an absolutely flush cut. Such a cut exposes less surface and heals more rapidly. The important point is not to leave stubs. Such short pieces of branch prevent the wound being covered with callus tissue; they die, and permit the growth of fungous rots that are likely to continue into the trunk and eventually destroy it.

When portions of branches are cut back the cut should be made just beyond a vigorous side branch or, in trees that are known to develop new branches readily from old ones, at a point just beyond that from which a new branch is likely to develop.

To eliminate the danger of the weight of a falling branch tearing bark from the trunk it is advisable to make at least three cuts (in the case of very big limbs the branch may be first reduced in length by cutting off sections, and then three cuts used to remove the final section). The first of the three cuts is an undercut made in an upward direction from the underside of the branch and extending inwards until the cut begins to bind on the saw and make it difficult to pull and push. The undercut should be located several inches outward along the branch from the point where the final cut is to be made. The second cut, out several more inches from the trunk than the undercut, is made from above and extends right through the branch. The third cut, the final one, is carefully made and removes the stub that is left after the second cut has severed the main part of the branch.

It is advisable to pare the margins of the saw cut with a sharp knife. This results in cleaner slicing of the cambium layer (located just beneath the bark) from which new callus tissue grows and promotes rapid and satisfactory healing.

All cuts over an inch in diameter should be given a protective coating of tree wound paint. Excellent products may be purchased for this purpose or a paint may be prepared at home. One I favor consists of equal amounts of white lead and powdered sulphur mixed with enough boiled linseed oil to make a thickish paint and enough

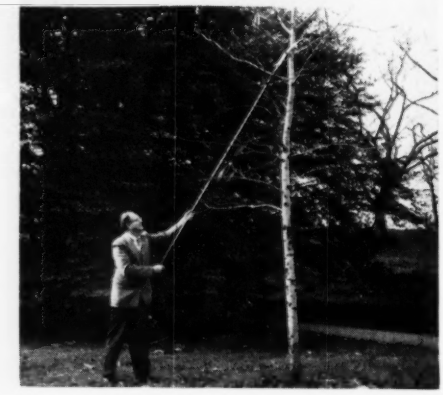
7. Margins of cut surface are painted with shellac to protect the cambium

8. Next, tree-wound paint is applied to cover the entire cut surface

9. Periodically, the coat of tree wound paint is renewed

10. Protective callus tissue continues to grow from cambium layer

11. Eventually, the wound heals completely and is covered with new bark



12. Left. A pole pruner enables operator to cut off small high branches while standing on ground.

13. Above. A pole saw is admirable for removing out-of-reach branches. It cuts on the downward pull stroke.

Below

14. Left. To make tree wound paint mix white lead

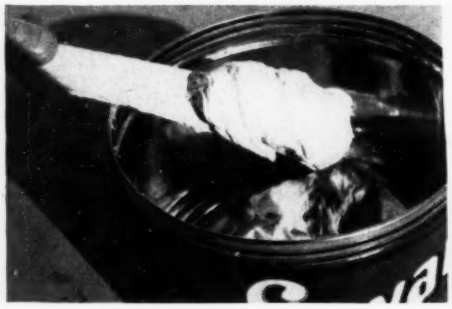
15. Center. With an equal bulk of powdered sulphur

16. Right. And enough lamp black to give a desirable color

made by stirring zinc oxide into linseed oil and adding lamp black for color. I recommend painting the ring of cambium tissue with shellac dissolved in alcohol before applying the tree wound paint. In the case of large wounds that do not heal in a single year it is advisable to renew the coat of paint once a year but it is not necessary to use shellac after the first time.

Two tools of great help in pruning are the pole saw and the pole pruner. Both permit the severing of branches of modest size at a considerable height, while the operator stands on the ground.

The pole saw is simply a saw blade that cuts on the pull stroke (which, in the case of a pole saw, is the downward one) and is secured by a socket to a long handle. The pole pruner consists of a scissor jaws of pruning shear type attached at the end of a long handle and operated by means of a rope tied to a lever that closes the jaws to make the cut; upon the release of the tension on the rope the jaws are opened by a spring device. Combination pole saws and pole pruners are available but, like most dual-purpose tools, they are less useful than the one-purpose kinds. When necessary, out-of-reach-by-hand wounds can be coated with tree wound paint with a paint brush tied firmly to the end of a long pole. One final word regarding tools—avoid saws that have teeth on both edges; much harm can be done by them if they slip accidentally or are handled carelessly.



17. Left. Add boiled linseed oil sufficient to make a thick paint.

18. Right. And stir thoroughly until a uniform mixture is obtained

carbon black to color it dark gray. Another recommendation is three or four pounds of dry bordeaux mixture stirred into a gallon of linseed oil and enough carbon black to darken the mixture. Yet a third tree wound paint is

SPURIA IRIS (from page 15)

versified as generation after generation develops. 1957 introductions will see flowers with cream standards and orange falls available. There will be a flower which has a cream base faintly lined with violet, there will be a blue with a large brilliant orange signal patch, and a nightshade-blue spuria.

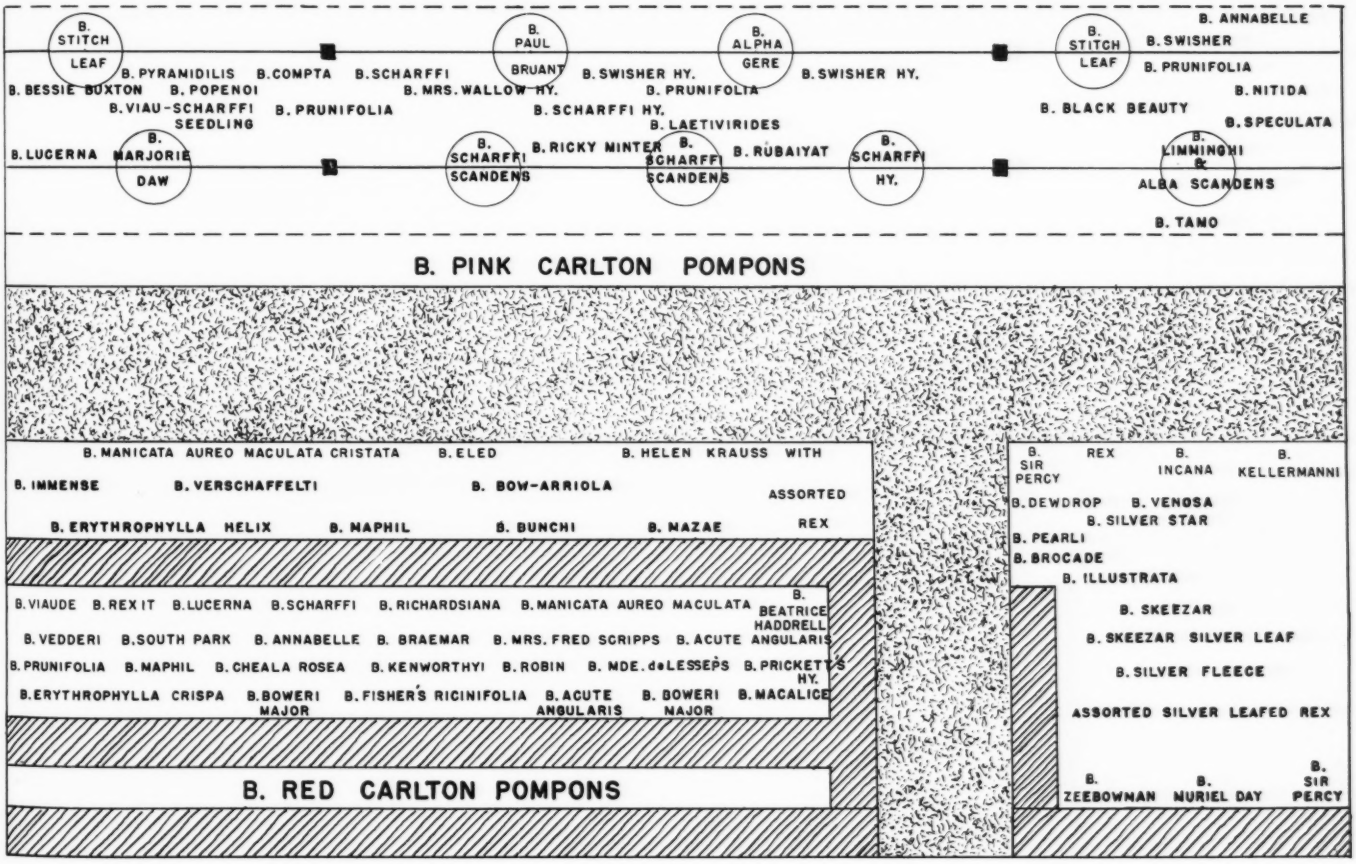
These are only some of the possibilities developing in the spuria breeding programs throughout the nation. The falls of these flowers are becoming as large as silver dollars. The standards are becoming erect and nearly two inches wide. The growing habits of the plants are becoming more vigorous and the resistance to disease stronger.

It is hoped that this work being done by a few careful plant breeders will create an enthusiasm for the spuria iris that will equal the tall bearded type. The work has only begun but the horizon is unlimited. In years to come we shall see as much variation in spurias as we now see in the tall bearded. This will be important in garden planning.

We are in the process of raising the curtain on a new era of iris culture. All plant lovers should be drawn to experiment with this different type of plant. Each step of improvement will lead us closer to the pot of gold at the end of the rainbow. All are urged to join the glorious venture into the field of the undiscovered. What we shall find nobody knows—but of one thing we are certain, it will be a thrilling venture.

Right, exhibit of begonias, staged by the Wm. Penn and Margaret Gruenbaum Branches of the American Begonia Society at the fall show of the Pennsylvania Horticultural Society in Swarthmore, Pa.

Below, layout of the above exhibit: the ruled sections represent railroad ties used effectively to separate the tiers of begonias; the shaded section represents gravel paths



Miniature Roses

By Margaret Pinney

Continued from Nov.-Dec. 1956

GLOIRE DES LAWRANCEANA was a dark crimson or bright purple H.C.M. dwarf known in 1837 (*Modern Roses* IV, p. 108).

GRACILIS. Reported by *Modern Roses* IV, p. 115, to be "Cent. Full, compact, pale rosy pink with lilac-blush edge. Dwarf, branching." This sounds not unlike the so-called "centifolia minima" which often fades to lilac-blush around the edges.

GRANATE H.C.M. This lovely little plant, almost thornless, is three to six inches high, of the true *Roulettii* type with slim stems, tiny leaves, and neat pointed buds. The buds and flowers are a very dark crimson with occasional white streaks, unfading in the sun. The blossoms are about an inch wide with twenty-five petals. The dark bluish leaves have red edges and veins. Granate from 'Merveille des Rouge' X 'Pompom de Paris,' bred by Pedro Dot in 1947, was sold to me by the Bermuda Nurseries under the rather dreadful name of 'Yippy.'

GRENADINE H.C.M. This is not to be confused with Granate in spite of the similarity of names. It is a larger and coarser plant, growing to nine inches, and has many large sharp red thorns. The long-stemmed buds have huge leafy sepals. The one and one-half-inch-wide flower is very double (about a hundred petals) and only a hint of stamens in the very center. It is a rich, deep unshaded ruby, a very lovely color. It came to me from the Bermuda Rose Nursery as a 1955 novelty; originated by Pedro Dot.

HUMPTY DUMPTY H.C.M. A stocky, thick bush about three to six inches tall, with dark green, red-edged leaves. The deep pink buds have long leafy sepals. The clustered flowers are bright carmine-pink with deeper centers, fading somewhat in hot weather to a uniform pink. They are very double, with about a hundred petals, and open quite flat to show a few stamens. This is a very lovely little rose. It came to me from T. Robinson of Porchester Nursery, Nottingham, England. It was bred by Jan de Vink from *Rosa polyantha nana* X 'Mrs. P. S. duPont' X 'Peon.'

IMP H.C.M. This came from Hillier and Sons of Winchester, England. I think it is the same as 'Red Imp,' which see.

JACKIE H.C.M. Pat. Rights Res. Its height is three to twelve inches, but it blooms very happily at three. The pale creamy yellow flowers, one and one-half inches wide, seem large for the bush, but are prettily shaped and held well. The five outside pointed petals turn back to show the fifty or so shorter and narrower central petals, which have a slight greenish tinge; no stamens are visible. The flowers are sometimes in clusters, oftener single. The leafy bud is a soft yellow, one inch long, beautifully shaped. It has pale green-blue leaves, a few large gray thorns, and a moderate fragrance. It was bred by Sequoia Nurseries in 1955 from the Brownell Sub-Zero rose 'Golden Glow' X 'Zee.'

JACK HORNER H.C.M. This is a sturdy small dwarf of two to seven inches. The fat bud is a deep pink, with leafy sepals about twice its length. The flower, bright pink, is one-half inch wide, has about fifty petals and also a slight sweetness. The dainty, deeply serrated leaves have a red line around their margins; there are no thorns. 'Jack Horner' came from T. Robinson; its pedigree is 'Marge Koster' X 'Peon.' It was introduced in 1955.

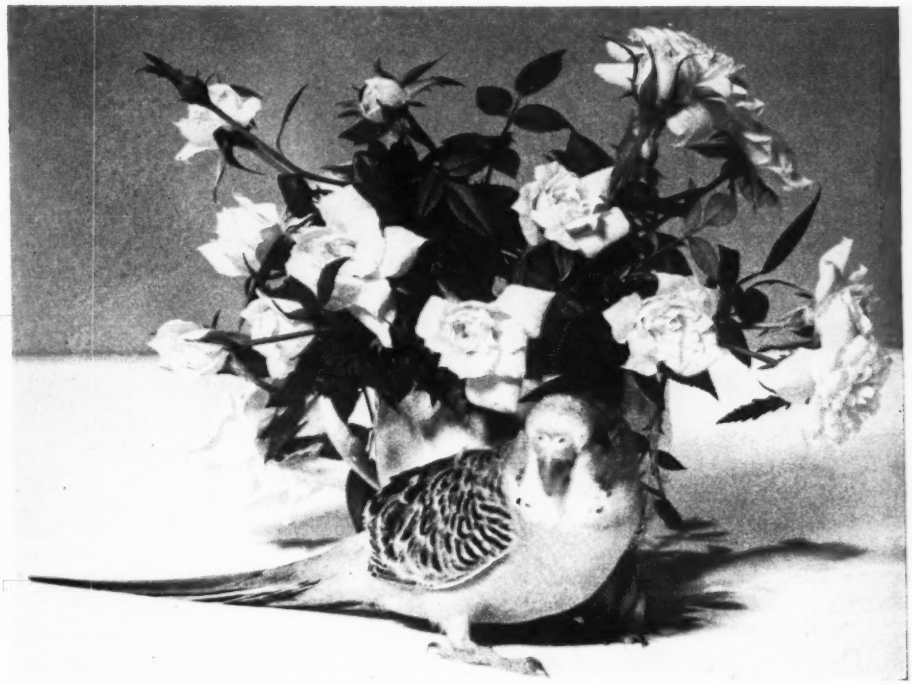
JULIET, a "miniature fairy rose," sold by Spring Hill Nurseries, is advertised as flower "larger than most miniatures (one to one and a half inches) bright cardinal-red blooms, sturdy, healthy, vigorous plant." This is probably 'Juliette.'

JULIETTE H.C.M. Lamb Nurseries, which purchased this rose from the Joseph A. Martin Co. of Painesville, Ohio, ten or twelve years ago and introduced it, calls it a "miniature 'Gruss an Teplitz'"—an apt description. 'Juliette' grows from five to seventeen inches but is usually a slender, well-proportioned, vigorous shrub about seven inches high. It produces its brilliant oxblood-red flowers, with a slight perfume, on long slender stems. They have about thirty petals and are exquisite as buds, but open in a rather loose, floppy manner to show the stamens. The leaves are dark with a lot of red in them, thorns few and soft. In spite of its faults, it is one of the loveliest of all roses.

KING OF THE DWARFS H.C.M. Of a rather coarse type with heavy stems and leaves, though it grows only about eight to ten inches. The clustered flowers are about one inch wide, deep crimson with white base, of twenty to thirty petals. The buds are dark crimson. It was bred by Wilhelm Kordes in 1954 under the name of 'Zwergenkonig'—a seedling of 'Minna Kordes' (called 'World's Fair' in the U.S.) and of 'Tom Thumb.' The Bermuda Nurseries describes it as "a small 'Crimson Glory'."

LA PRESUMIDA H.C.M. This darling, alas! slipped through my fingers. The hardships of travel and fumigation proved too much for 'La Presumida.' It grows about six to eight inches tall, with dainty medium green leaves and slight stems. The flower is said to be very double, of an "orange-flame" or "pumpkin-yellow with reddish interior varying to white with yellowish interior." It was produced by Pedro Dot in 1948 from 'Eduardo Toda' X 'Pompon de Paris.' The Bermuda Rose Nursery calls it 'Peter Pan.'

LAWRANCEANA. The term "Lawranceana" is, perhaps, the vaguest of all names for miniatures. History relates that about 1802, when the original miniature China rose was imported to England, it became very popular and was identified with the artist Mary Lawrence because she so frequently put it in her paintings. Some say it was pink, some crimson, some white, some red and pink. At the 1951 New York flower show, Conard-Pyle



The pale creamy yellow, moderately fragrant flowers of 'Jackie' are attractively arranged in a small container

exhibited a plant in the Men's Garden Club greenhouse which they labeled "Lawranceana." It was indistinguishable from *R. Roulettii.*

Under R. chin. min. *Modern Roses* IV p. 263, says "plants 3-4 inches high with single fls. and currently distributed as R. Law. are not that plant but are unnamed strains or clones of R. chin. min."

In a letter to me, dated November 18, 1955, Dr. R. C. Allen writes: "I don't use the term Lawranceana except in a very vague, general way to refer to miniature roses as one broad indefinite group. It never was a truly valid name. It was applied by Robert Sweet about one hundred and fifty years ago, probably to a garden selection which was not representative of the species. I don't think the name has much value except for sentimental reasons and today it is so indefinite that it is virtually meaningless for identification purposes." It seems to me that that clears up Lawranceana.

LEMON DROP H.C.M. This is the most captivating of the tiny low growers bred by Sequoia Nurseries. It stays two to four inches high and spreads wide, with minute foliage and delicate stems. The fat buds are a clear peach, turning to pink tinted cream as they open. The little three-quarter inch flowers are borne profusely in wide clusters. The outside twenty to thirty petals are wide oval and curl back to show the strap-like center petals and the many stamens. The orange thorns are small but many and sharp. The parents are (*R. Wichuraiana* x 'Floradora') X 'Zee.'

LILAC TIME H.C.M. Pat. Rights Res. This is a small bush, four to ten inches tall, with very slender, pale green, thornless stems and large, medium green, rather coarse leaves. The mossy buds are a blued dark pink. They open to a pale pink, turn to a light magenta, and finally to lilac. In cool weather the lilac is more pronounced. The seventy or eighty petals are pointed as in 'Sweet Fairy,' wide oval on the outside, the central ones little more than straps. The flowers do not open flat, and there are very few stamens visible. It was bred in 1955 by Sequoia from 'Violette' X 'Zee.'

LITTLE BUCKAROO H.C.M. This hardy vigorous plant, up to fifteen inches, bears a profusion of bright red flowers; the leaves are glossy green. It was originated by Sequoia Nursery in the fall of 1956; its parents are (*R. Wichuraiana* x 'Floradora') X ('Oakington Ruby' x 'Floradora').

LITTLE DOT, probably H.C.M. The height is described as nine to twelve inches; the size of the pure white, fully double flower is nearly one and one-half inches across. It can be purchased from the Winkfield Manor Nurseries, Ascot, Berkshire, England.

LITTLE GEM. It is said (*Modern Roses* IV, p. 163) to be a dwarf moss rose, tiny, heavily mossed, with double, clustered, bright crimson flowers, richly fragrant. It sounds delightful. It was originated by W. Paul in 1880.

LITTLE PRINCESS H.C.M. This tiny, very dainty, rather delicate plant, height four to eight inches, is said by *Modern Roses* IV, p. 163, to be the same as 'Pixie.' If this is so, the one I bought from England in 1950 was certainly from a different clone from that of any 'Pixie' I ever knew or possessed. It carried its flowers in clusters; 'Pixie' does not. Its color was always pale pink; 'Pixie' varies according to the temperature. The number of the petals and shape and color of the buds did not differ. 'Little Princess' had very large translucent red thorns; 'Pixie' has none on its stems and only the conventional soft ones on the leaf backs. 'Little Princess' is called 'Princesita' in Europe. Having most sadly lost mine in the bad winter of 1955, I ordered a new one from a nursery—this proved to be still different, with large, strong stems and dark red flowers!

LITTLE SUNSHINE. A dwarf polyantha, it has creamy yellow to deep golden flowers flecked or splashed with crimson, double, one and one-half to two inches. It was bred by Cumming from *Rosa multiflora nana* X 'Soleil d'Or' and introduced in 1915 by A. N. Pierson (*Modern Roses* IV, p. 163).

LULU. See *R. Roulettii.*

MAID MARION. This is the English name for 'Red Imp,' but again the clones must vary slightly. I have had 'Maid Marion' from three separate sources and find that it differs from 'Red Imp' in being a deeper, clearer crimson to the base of the petals, with no trace of white. The plant, too, is about twice the size of 'Red Imp,' being six to eight inches tall.

MRS. W. H. CUTBUSH. Now comes a rose called by several different names—I am not convinced that any is correct, but it smells as sweet by any. Two plants of it were sold to me several years ago in England, one as 'Peon,' one as *R. pumila.* I knew, of course, that it was neither, but curiosity was too strong for me. In 1954 I took

Miniature rose 'Humpty Dumpty' forms a stocky bush, three to six inches high, that bears double carmine-pink flowers

'Jack Horner' is a sturdy dwarf of two to seven inches, with fat buds and slightly sweet, gay pink flowers

a flowering spray down to Rose Day at The New York Botanical Garden and was told by Everett Piester of the Hartford Rose Gardens that it was "Mme. Cutbush." According to *Modern Roses* IV, p. 215, 'Mrs. W. H. Cutbush' is a polyantha, a sport of 'Mme. Norbert Levasseur.' The flower is described as "Large, semi-dbl., open, slightly fragrant, deep pink; cluster on long, strong stem. Fol. glossy. Vig. (15-20 in.)." My rose is a large-stemmed, sprawling plant, eight to thirteen inches at most, with dark green, tough, red-edged leaves. The flowers are in clusters, one and a half inches wide, with twenty-five to thirty petals of a delightful pale carmine shading to yellow at the base. They have a decided fragrance. This is one of my top favorites. It loves to grow, blooms constantly, and makes of all the miniatures the best house plant.

MARILYN H.C.M. This is said to be a dark red miniature, bred by Pedro Dot in 1955.

MARR. This is another polyantha of slightly larger size, a rangy ten- to twelve-inch plant with thick red, thornless stems and glossy, dark green foliage. The exquisite, cupped, inch-wide flowers grow in clusters and are a rosy coral with sometimes an orange glow. They fade badly but are produced so constantly that there are always fresh glowing buds opening to take the place of the old flowers. This rose came to me from Lamb Nurseries and is in this district my freest bloomer, though it was not so in Scarsdale. Forrest Lamb wrote me that 'Marr' was introduced by Mrs. L. N. Roberson of Seattle.

MIDGET H.C.M. Pat. 466. This rose grows about six to twelve inches tall, with heavy stems and small, medium soft leaves. The short-stemmed half-inch blossoms are in close clusters. They are slightly double, about twenty petals, of a bright carmine red, paler toward the center. They open medium wide, are rather untidy in appearance, and fade badly in bright sun. There is a suggestion of scent when the fat pink buds first open. I find it a rather shy bloomer. 'Midget' was bred by de Vink from 'Ellen Poulsen' X 'Tom Thumb.'

MISS MUFFETT H.C.M. This is a lovely compact little bush, three to six inches tall, with slender stems, dark green, red-veined leaves, and a good quota of thorns. The soft appleblossom-pink flower has a pale yellow center and about eighty petals which open wide to show a pinch of stamens. The delicate bud is mossy, very pale pink, and pointed. It was bred by Thomas Robinson in 1955, resulting from a cross between 'Baby Bunting' and 'Peon.'

MON PETIT H.C.M. A small (six to eight-inch) rather frail plant, at least in my garden. It is supposed to be a free bloomer, but does not perform well here. The flower is a light, pinky red (*Modern Roses* IV, p. 203 says carmine-purple) and quite double with about eighty slender, strap-like petals. 'Mon Petit' has a short, round, deeper pink bud. It is one of Pedro Dot's children from 'Merveille des Rouges' X 'Pompon de Paris' and was introduced at the 1947 Universal Rose selections.

MON TRESOR. See 'Red Imp.'

NEMESIS. Centifolia type, though it blooms throughout the summer. The bush is six to ten inches tall with rather thick stems and pale, soft leaves. The round bud is very dark crimson. The flower is magenta to dark crimson with a white center, lightening in hot weather. It is one and a half to two inches wide and has about fifty petals. It opens in a loose, floppy manner to show many yellow stamens. 'Nemesis' was brought out by Bizard in 1836.

OAKINGTON RUBY H.C.M. A compact, healthy bush four to ten inches tall, with very thin, pale green, almost thornless stems and small, dark green leaves. The lovely half-inch, dark crimson flowers have about fifty petals, open flat, and are very slightly scented. Originated by Bloom in 1933.

PAPOOSE. Described by its breeder as a "new miniature climber or creeper," 'Papoose' grows only about two inches tall but spreads rapidly sideways. The one-inch, single, pale cream-colored flowers come in clusters. They have five notched petals. The peach-pink buds are very pointed, one-fourth inch long. 'Papoose' has rather thick, rambler-like stems but dainty *R. chinensis minima* leaves of a dull medium green. It seems to be non-remontant. It was bred by Sequoia Nursery in 1955 from *R. Wichuraiana* X 'Zee.'

PARA TI H.C.M. The flower is large for the bushy small plant, five to eight inches high. One and a half to

two inches wide, the flower shades from cream to yellow and pink at the base. The fifteen petals curl back to show the stamens. The bud is five-eighths of an inch long, of a beautiful tea-rose type. This is a Dot creation (from 'Eduardo Toda' X 'Pompon de Paris') and was introduced by A. Meilland in 1946. It is called 'Pour Toi' in France and 'Wendy' in England.

PATTY LOU H.C.M. Pat. 1335. Said to be ten to twelve inches high, but in my garden 'Patty Lou' stays about five. The flower is an inch across, of a brilliant deep pink with a silvery sheen on the outside of its one hundred petals. It blooms both singly and in clusters, has nice long stems and a pleasant fragrance. It was bred in 1953 by Sequoia Nurseries from 'Oakington Ruby' and an unknown. In the American Rose Annual for 1956, Proof of the Pudding p. 224, it was given a rating of 7.8.

PEGGY GRANT H.C.M. This is a tiny cluster-flowering rose of good habit and appearance; it grows about five inches tall. The leaves are pale green; the deep rose flower of about twenty-five petals spreads out flat to show many bright stamens. It was a Sequoia production of 1954 from ('Robinetta' x 'Tea Rose') X 'Zee.'

PERLA DE ALCANADA H.C.M. This brisk little number is, to my mind, the ideal miniature rose. It is five to seven inches high when properly grown, though I have seen it as much as fifteen in a lush English garden. The bright, unfading cochineal-carmine flowers are an inch in diameter, borne in gratifying numbers from early May until hard frost. They are nicely shaped, of ten to twenty petals. The withered petals drop off. The leaves are dark and glossy with red new shoots. 'Perla De Alcanada' was bred by Pedro Dot and introduced to the United States by Meilland in 1944. Its parents are 'Perle des Rouges' X *R. Roulettii.* It is called 'Wheatcroft's Baby Crimson' or merely 'Baby Crimson' in England; the Bermuda Nursery sells it under the name of 'Titania.'

C.L. PERLA DE ALCANADA, originated by Meilland, 1952.

PERLA DE MONTSERRAT H.C.M. This is another of Pedro Dot's pearls, from 'Cecile Brunner' X *R. Roulettii.* It grows about six to eight inches tall and is a closely set, well-proportioned shrub with semi-double flowers of about twenty petals. The flower is a deep hermosa-pink in the center, shading to pale pink on the outside edges of the petals. The bud is lovely, long and pointed, with the petals turning back slightly as they open, to show the two colors. It has very leafy sepals projecting far beyond its end. The leaves are dark and rather thick, and there are many long translucent red thorns. It is called 'Dixie' in Bermuda, Heaven knows why.

PERLA ROSA H.C.M. This is the third of Signor Dot's pearls, and a pearl it is. The bush grows about five to seven inches high, with dainty light green leaves and tiny pale pink tea rose buds. The flowers have about thirty-five to forty petals, bright deep pink with pale yellow centers. The flower opens flat with no stamens visible. It is thornless except for the always-present leaf-back prickles. Its one fault is that the flowers fade to an unattractive pinky gray and linger too long. 'Perla Rosa' was brought out in 1946. The parents are 'Merveille des Rouges' X 'Pompon de Paris.'

CLIMBING PERLA ROSA Cl. H.C.M. (*Modern Roses* IV, p. 51.) A sport of 'Perla Rosa' developed by Pedro Dot.

PETER PAN. See 'La Presumida.'

PETITE H.C.M. This grows about six to eight inches tall, has soft, medium green leaves and a few thorns. The flower is fairly double, with about fifty petals. The Spring Hill Nursery describes it as "Exquisite deep rose to cameo-pink with enhancing silvery sheen." Mine is a light pink. I do not know its origin or parents and it is not mentioned in *Modern Roses* IV. Mr. Hennessey in his catalogue advertises a "Petite" as "one of the best pink sports of Garnett." It does not sound like this.

To be Concluded
in the March-April issue

'Marr' freely produces its exquisite rosy coral flowers on a rangy ten to twelve-inch plant in the author's Armonk, New York, garden.

Appleblossom-pink flowers show up well against the dark green, red-veined leaves on miniature rose 'Miss Muffet.'

My Experience With Japanese Chrysanthemums

By William K. Ishizu

PROBABLY, amongst the countless genera of flowers found and cultivated in Japan, the chrysanthemum is regarded at highest esteem by the Japanese people. Though the cherry blossom is their national flower, the chrysanthemum flower (a large single or Ichimonji type flower consisting of sixteen petals) is the official household crest of their emperor. For centuries, this flower has been cultivated and improved by people surrounding the imperial court, and to this day an annual chrysanthemum festival is observed to which foreign diplomats are invited at Shinjiku Imperial Gardens. Following the old tradition, varieties exhibited there are products created within the garden walls and will not be released to the public and, conversely, varieties from the outside are used only as breeding stock and the flowers are not exhibited there.

For centuries in Japan, artisans particularly those surrounding the Imperial court have enhanced the prestige of the chrysanthemum and integrated it into their culture. This is reflected in their paintings, silk screens, pottery arts, and textile prints. And today if one should ask a little Japanese child what "kiku" (chrysanthemum) is, he would undoubtedly reply it is a flower, while a similar query to an average American child may receive a simple shrugging of his shoulders.

Though chrysanthemums are grown at every corner of Japan, breeding for new varieties is conducted by colleges, nurseries, and individuals principally around "Kansai" sector or southern Honshu, where the climate is generally mild and allows seeds to mature more freely. Their favorites, alike ours, are the giant exhibition varieties.

At Hirakata City, near Osaka, Japan, the cream of their chrysanthemum varieties is exhibited annually at All Japan Chrysanthemum Art Society Concours. The scope of this concours is noted by donors of trophies, i.e., the Welfare Ministry, Agricultural Ministry, Osaka Prefectural, Asahi News, and others. At this concours, this writer has observed an incurving variety which measured 33 c.m. or about thirteen inches in diameter. The trend there is to create flowers with broad petals, thus adding even greater massiveness to the flower.

Above. The author at Osaka, Japan, in November 1955, with six chrysanthemums typical of the Japanese varieties he imported for his nursery in California

Right. Chrysanthemum 'Taiko Kobar'—note the broad petals of this incurving exhibition type

In an initial trial by this writer with nearly two hundred and fifty varieties imported from Japan last spring, the majority has matured to the expectations anticipated, with the exception of a few early-flowering varieties which faded badly under southern California's ultra-violet rays. Since ancestral origin of all autumn-flowering chrysanthemums is common thoughout the world, the difference is limited only to their individual characteristics just as the difference of habits found between the "Turner" and "Pockett" varieties.

What to expect in the future from the Japanese? In Japan are to be found chrysanthemum varieties to bloom almost every month of the year. When summer-blooming small flowers are bred with autumn-flowering large varieties (after two or three generations of inbreeding process) the result obtained would be a larger-flowering, summer-blooming chrysanthemum. Today, the Japanese already have varieties measuring four to five inches when disbudded to bloom from May on throughout the summer. It is this writer's observations that our present photoperiod cultural methods employed by commercial growers in this country for year-around autumn-flowering chrysanthemum production may undergo some changes, because the true summer-blooming strain would not respond to light treatment. A question was asked during one of our discussions that ". . . if our present-day chrysanthemum is a product of union of *C. indicum* and *C. morifolium,* why can't we breed this with fifteen or more species found throughout Japan? For instance, with those found along the snowline of Hiei Mountains or those along the shoreline of Inland Sea to create more weather-resistant varieties." Probably this question will be answered in the future.

BOOK REVIEWS

THE OLD APOTHECARY SHOP. Serry Wood. 52 pages, illustrated. Century House, Watkins Glen, N. Y. 1956. $1 (paper bound)

The Old Apothecary Shop, the second booklet in a series being published by Century House on early American occupations, is as enchanting as it is authentic. The author takes the reader on a journey which begins in the days when the medicine chest, carried aboard ship or kept in the house of the rural doctor, was the "drug store." In this chest, often made of mahogany and fitted with brass handles — an object of beauty in itself—were kept pills and medicinal herbs and rum, the medicine of early colonial times.

The author leads us into the days when our country was more settled and the doctor himself became the keeper of the apothecary shop, either in his own house or in a nearby building; he then reviews the nineteenth century pharmacy in which clerks from wholesale drug houses began setting up their own shops; they were often primarily merchants, they carried also such items as soap, stationery, candy and cigars and malt whiskey which was then thought by many to be a fine medicinal tonic. We hear, too, of the patent medicine age, and then on into the soda fountain stage which really blossomed in the early twentieth century with its marble top tables, wire chairs, and new patent soft drinks such as "Moxie."

The book is well illustrated with pictures of old mortars and pestles, porcelain drug jars, posters of snuff and pain killers as well as other trade objects. There are recent photographs of some of the notable restorations such as the apothecary at Cooperstown, New York, at the Farmer's Museum. The only criticism we have of this booklet is that we wish that there could have been much, much more of it.

DOROTHY CHILDS HOGNER
Hemlock Hill Herb Farm
Litchfield, Conn.

THE HISTORY OF THE BRITISH FLORA. H. Godwin. 384 pages, illustrated, indexed. Cambridge University Press, New York. 1956. (Printed in Great Britain) $16.50

The History of the British Flora does, as the subtitle says, provide a factual basis for phytogeography. This factual basis is dual: the known occurrence of species in the British Isles, supplemented by knowledge of their distribution on the continent, especially, and the record of past occurrences as revealed mainly by fossils. There is, I think, no other place in the world than northwestern Europe, including the British Isles, where the facts are so abundant, both as to the known stations for the contemporary occurrence of members of the various species, and the comparative richness and depth of the fossil record. This latter is, of course, mostly post-glacial and derived from the typically twentieth-century science of palynology or pollen analysis. Furthermore, British scientists have been leaders in phytogeographical thought for well over a century and the history of the British flora, as Godwin says, "has been in effect a test piece, a *cause célebre,* in the science of biogeography for at least a half-century." Finally, phytogeography has to be based firmly on a secure knowledge of geology, and this, too, exists for the region under consideration. This relationship, however, is mutual: geological knowledge assisting the understanding of biological history and biogeography modifying and reinforcing geological interpretations. This is true also for archeology and anthropology, and pollen analysis has become a tool of immeasurable value in these fields, with mutual benefits.

In all these fields of study and application—plant ecology, phytogeography, pollen analysis, and their interrelations with geology, archeology, and anthropology—Dr. Godwin has been a leader in research and interpretation. There is no one better fitted to produce a history of the British flora than Dr. Godwin, and his accomplishments—as brought together in this book—are a magnificent contribution. This book is recommended to all serious students and investigators in the several fields we have mentioned. It provides not only the superstructure of the sciences today (solid British architecture!) but lays a foundation of such strength that it can be built on with confidence for an untold future.

STANLEY A. CAIN
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WILD FLOWERS IN HUNGARY. Erno Vajda. 49 pages of text, 120 plates in black and white; indexed. Corvina Publishing House, Budapest, Hungary. 1956. $7

The heart of this book consists of one hundred and twenty beautifully reproduced large black and white photographs of Hungarian plants in their natural habitat. A running commentary and general discussion of the Hungarian flora at the popular or semi-popular level is also provided. The work was originally written and published in Hungarian. The English version, translated by Eva Rácz, was likewise published in Hungary.

ARTHUR CRONQUIST

NEW ZEALAND NATIVE PLANT STUDIES. William C. Davies. 328 pages, illustrated; index of plates. W. S. Heinman, New York. 1956. (Printed in New Zealand) $10

In bygone years Mr. Davies' photographs were one of the highlights of a visit to the Cawthron Institute, but now we have a selection of them in book form.

These superb plates are arranged in a somewhat scrappy manner to illustrate origin, distribution, and other aspects of the New Zealand flora, but I think this is more than compensated for by the appeal to the imagination. Plate 72 shows the forested flanks of the southern Alps where representatives of eastern and western hemispheres meet. True, you will not find *Dendrobium Cunninghamii* perching on *Fuchsia excorticata,* but that is simply because the fuchsia, by shedding its bark, discourages all lodgers. They may be found side by side. In the less desirable country grow the *Nothofagus*—very similar to those of South America, Tasmania, and New South Wales and complete with the parasitic fungus *Cyttaria*—sometimes covering hillsides, sometimes in stands of tens or hundreds, exactly like the remnants of a great southern army stubbornly holding the fort against the podocarps and their associates that have swept down from the north.

I think plate 128, showing the juvenile *Rimu* is the greatest triumph of the collection. That lovely fountain of light green has to be seen to be believed. But it only reaches such perfection when sheltered from wind and sun, in dim dripping bush where photography is almost impossible, where the *daily* rainfall averages more than two-thirds of an inch. The only way to grow it to such perfection would be in a wardian case among filmy ferns and always dripping with moisture as it does at home.

New Zealand Native Plant Studies is a delightful gift book.

A. W. ANDERSON
Timaru, New Zealand

COMMON EXOTIC TREES OF SOUTH FLORIDA. Mary Barrett. 414 pages, illustrated, indexed. University of Florida Press, Gainesville, Fla. 1956. $8.50

In judging this book, the choice must be made of the point of view, whether it should be that of an expert botanist or of one possessing a smattering of botanical knowledge. The latter is the case in this review. Each of three hundred and fifty or more of the non-native trees commonly met with on the streets of Miami, St. Petersburg, Ft. Meyers, and elsewhere in sub-tropical South Florida has about a page devoted to a skillful, comprehensive, and interesting description of it. About two hundred are accompanied by an illustration of a single leaf. The system of identification by leaves is a main feature of this book, depending upon a minute and painstaking scrutiny of the size, shape, texture, surfaces, arrangement on twigs, and especially of the veins. There is a key to the species based upon these leaf characters.

Such a system will be useful and is welcome, but there are so many other characteristic features of a tree, which would be made visible if the book were accompanied by a companion volume of photographs of clusters of leaves, of flowers and fruit, of close-ups and distant views of the entire tree. The price of the book would then rise to $25.00 or more. However, this reviewer thinks that if the average user can afford an automobile to visit the locations listed where examples of a particular tree may be found, he can also afford a book giving a better photographic idea of the tree. Modern photography has opened up great possibilities for a book on identification of the unique collection of trees in South Florida.

Among the valuable features of Prof. Barrett's book is the list of exact locations of various accessible places in South Florida where an example of each particular tree may be found. Several cities are usually listed for the convenience of people living in those localities in Florida.

"Sight-seeing trips" along certain Miami streets assist in identifying the trees as one travels down the highway. About fifty species of trees are thus pointed out.

Another valuable feature is the list of references at the close of each tree's description, referring to other publications where pictures of the tree and further material may be found. This, to a certain

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extent, compensates for the lack of photographs. The book will be most useful when used in conjunction with other books such as *Flowering Trees of the Caribbean, Flowering Trees and Shrubs in India,* Macmillan's *Tropical Planting and Gardening,* Neal's *In Gardens of Hawaii,* Benthall's *Trees of Calcutta,* all of which are available from The New York Botanical Garden's Book Service.

The section on *Ficus* is especially valuable, Prof. Barrett being an outstanding authority on this genus. The author has assembled a wealth of information about each tree—its history, its geographical distribution, its uses, native and otherwise, its bark, fruit, flower and leaf; and the origin, phonetic pronunciation, translation and synonomy of its name.

R. B. KURTZ
New York, N. Y.

YOUNG CHARLES DARWIN. Fred Reinfeld. 184 pages, illustrated, indexed. Sterling Publishing Co., New York. 1956. $2.95

This is an abridged account of the early life of this important naturalist and of the events that led him to the conclusions which changed the entire course of biological thought. It is written for the younger set and the writer's choice of anecdotes is carefully made to please the interested teen-ager. This is not difficult, for Darwin's five-year cruise around the world on the "Beagle" was filled with a multitude of adventures well calculated to arouse the interest of most young people.

It was on the islands of the Galapagos group off western South America that Darwin encountered the animals which set his mind to searching for the reasons to explain the variation he observed between closely related animals, how organisms become restricted to one small island, etc. The answers and part-answers to these questions, published in his monumental *Origin of Species,* aroused angry storms of protest which are scarcely quieted even yet; still Darwin ranks foremost among the natural scientists of the nineteenth century.

The book is clearly and interestingly written, but if any criticism of it is valid, this is that it tends to be choppy, the unfortunate result of attempting to tie together a relatively small number of incidents from a much larger story. It is, nevertheless, recommended as a source of inspiration to the young man or woman with an interest in the world of living things about them.

RICHARD S. COWAN

THE WORLD OF PLANT LIFE. Clarence J. Hylander. 653 pages, illustrated, indexed. Macmillan, New York. Second edition 1956. $8.95

This new edition of the classic, *The World of Plant Life,* is practically identical with the first edition which appeared in 1939, except for slight differences in the introductory matter and the omission of the two appendices which appeared in the earlier work. Personally I am very sorry to see the check-list of species and the reference reading list omitted. True, they cover fifty-five pages in the first edition, but could easily have been placed in smaller type and double columns and thus still included on a far lesser number of pages. The one hundred and ninety full-page photographs and seven hundred line drawings are still one of the most attractive features of the book, and the resumés given of the various groups, especially as we see them in the United States, are quite adequate. The illustration on page 443, however, labeled "Lemon Verbena," represents a fogfruit *(Phyla lanceolata)* instead of the true lemon-verbena *(Aloysia triphylla).* This error doubtless has been perpetuated through the use by so many authors of the catch-all generic name *Lippia* for both plants, in spite of their very diverse habit and structural morphology. The "Mat Grass" which is mentioned on page 447 is actually *Phyla nodiflora* var. *rosea* and does not have the extensive range which the author ascribes to it in our country.

H. N. MOLDENKE, *Director*
Trailside Museum
Watchung Reservation
Union County, N. J.

THE HARDINESS OF PLANTS. J. Levitt. 278 pages, illustrated, indexed. Academic Press, New York. 1956. $7

Research workers in the plant sciences will be familiar with a valuable guide to the literature on frost injury and hardiness published by the author some years ago. The present work brings this earlier guide up to date, elaborates it in discussion form and illustrates the discussion with numerous readily interpreted tables, graphs and photographs. Part I, half the book, is devoted to fifteen major aspects of low temperature hardiness, Part II to low moisture hardiness and Part III to high temperature hardiness. A bibliography of more than nine hundred and fifty entries covers most, if not quite all, of the text references.

In analyses of the very practical relationships of such factors as cool temperature hardening, light and soil moisture to freezing injury, or among numerous related topics, the inquiring horticulturist may find much to interest him and much to puzzle him in this book. But the author is writing for the scientist rather than the lay reader. In so doing he has provided an outstanding research critique on a subject of enormous practical importance.

In underlining both the complexity of the physiological bases of plant hardiness and the individuality of plant response, such a work is of especial value in pointing up the many blank spots of our current understanding. One hopes, with the author, that his efforts may encourage increased research attention to the unanswered questions on this subject.

HENRY T. SKINNER, *Director*
U. S. National Arboretum
Washington, D. C.

THE WONDERS OF SEEDS. Alfred Stefferud. 119 pages, illustrated by Shirley Briggs; indexed. Harcourt, Brace & Co., New York. 1956. $2.75

In this small volume, Mr. Stefferud gives young readers an expert digest of scientific facts presented as buried treasure for young readers. The study of seed cycle and basic botany is the point from which paths radiate to stimulate the young readers' interest in seeds as food, products for industry, and as messenger links from past civilizations.

Seeds, as the keys to plant cycle, present a picture of adventure with nature that would capture the interest of junior readers. Projects are outlined for testing simple scientific truths. Nature's partnership in man's well-being is brought out in the experiments and uses of seeds and their by-products.

The book is filled with inspirational material for Juniors to seek these seed secrets and reap their magic benefits.

The drawings by Shirley Briggs give excellent picture lessons in basic botany.

ANABEL COMBS LASKER
Scarsdale, N. Y.

ROCK GARDENING. Roy Genders. 114 pages, illustrated, indexed. Dover Publications, New York. 1955. (Printed in Great Britain) 65c

At this time when rock gardens are becoming increasingly popular, particularly in newly developed suburban sections, this book is welcome because of its persuasion away from the common mistakes found in the usual "rock heap" gardens. It stresses naturalness, moderation, and versatility, which are all important in a delightful rock garden.

Mr. Genders covers all the various phases of rock garden construction, site selection, planting, maintenance, propagation, and pest control with intelligent and sound principles. However, so little space is allotted to each subject that I must consider it as an introduction to rock gardening rather than a complete guide to success in a rock gardening venture. His directions for constructing a garden, although based on authentic procedure, tend to be rather vague because of lack of detailed descriptions and illustrations. The list of plants for different locations and soils is excellent as a beginner's guide. Most are noteworthy selections that thrive with a minimum of care and fussing. However, it must be re-

(Continued on page 30)

NEWS, NOTES and COMMENTS

Dedication of Research-Laboratory Building of The New York Botanical Garden

The Research-Laboratory Building was formally dedicated and open to members of The New York Botanical Garden for inspection on October 24, 1956. All who attended the special event were greatly impressed with the attractive and efficient facilities of the modern structure.

Frederick S. Moseley, Jr., Vice President of The New York Botanical Garden, presided at the luncheon held in the west wing of the Museum Building (this also marked the opening of the wing, following its renovation under the direction of the Special Display Committee, and of the display "Exhibition of Economic and Food Plants"). Excerpts from Mr. Moseley's introductory remarks and from the remarks of the several speakers at the luncheon follow.

"I can, in part, imagine Mr. Harding's disappointment in not being present today, because for the last few years he has given so much to the realization of this essential element of our program.

"The original seed of research was planted years ago when this present building was built in 1900. Since then it has progressed through various stages until today—the day of the dedication of the new building — you will find that the seed has been carefully nurtured. It has been cultivated by some and it has been tended by others. There are several persons within reach of where I stand who have played an important part, and you will shortly hear from some of them. But there are others, like our Chairman of the Board, Joseph Swan, and his able assistant of the past, Mrs. Henry Harper, and Mrs. James C. Brady, who have helped to create the drive which has jelled this particular program. Nor could the seed have germinated in the beginning, were it not for a large anonymous gift which gave the impetus and set the machinery in motion.

"Years ago I remember reading a novel by Eugene Pool, called *The Harbor* . . . He spoke of a harbor not as a place of refuge or a terminus of a voyage, but rather as a place from which to start, the exciting place from which the expedition takes off. For those who have labored so hard in the past toward our present goal this, it seems to me, is not the terminus but rather the beginning of many an exciting voyage into the scientific unknown which will enure to the benefit of mankind and honor to our own botanical garden and, Dr. Robbins, may it always have the leadership and drive that you have contributed to its birth.

"Were it not for the initiative and generosity of our first speaker, we would not be here this afternoon. As a very young woman she became interested in the Garden and in 1919 was elected to the Women's Advisory Council. In 1934 she was elected to the Board of Managers where she has served with vigor and distinction ever since . . ."

Mrs. Harold Pratt: "I feel that this is a stepping stone to a far greater garden, and I know it is the intention of everyone here, now that we have our laboratory which we consider so essential, to carry on and make this Garden what we want it to be — a very, very, great botanical garden. It's well on its way, but I assure you it needs a few finishing touches. All I have done is to light a candle . . . What is far more significant is that the faith I have in the present and the future of this Garden is shared by Commissioner Moses; it is through him that we have received a contribution toward our laboratory from New York City. It means that this isn't a laboratory built by private funds upon land that belongs to New York City; it's a laboratory in which the City of New York has a share . . .

"We have many needs; among them is property on which we can propagate and grow, and in that we have to bow to the Brooklyn Botanic Garden because it has set a great example to us. We hope to profit by its example and in some way achieve something of the same sort ourselves.

"I want you to look back with me . . . We've been very fortunate in the Presidents of our Board. Each one of them has contributed a great deal. We've been very, very fortunate in our directors . . . They've left us a great heritage; over the years not only our herbarium, through the supervision of Dr. Merrill, but our library, through purchase and through bequests, has become one of the great botanical libraries in the world.

That gleaming copper dome on top of this building, Dr. Robbins tells me, has been made water-tight for the first time since he became director; but it does not make us fireproof, and it does not provide space for our research students—most of them graduate students—who come not only from New York City, but throughout this country and from abroad, to study here. We must have a library that will provide for expansion. We must have a library that will provide study rooms.

"We have our laboratory—and Dr. Robbins tells me that it is a jewel, and I think its luster will shine not only upon us but upon New York City as well — but we must have another stepping stone in our progress and that must be a library. I want everyone here to think about it and make suggestions as to how that goal can be reached."

Mr. Rodan (representing Robert J. Wagner, Mayor of the City of New York): "Mayor Wagner asked me to present to you his greetings and to express his appreciation for the remarkably fine volunteer effort which has produced this monumental addition to the resources of New York City for research, for education, and for the furtherance of the program of recreation and enlightenment for the people of the city. The Mayor asked me to tell you that the effort which has produced the laboratory is to his mind and to that of the city administration, a most signal example of what can be done—of what has been done —to make New York City the cultural center that it is and the promising center that it will be in the future."

Robert Moses, Commissioner of Parks of the City of New York: "I had, personally, some doubts just what the City of New York ought to do and was justified in doing in the building of a research laboratory in connection with this institution or any other. On the theory which I still think, by and large, basically is the right one, exhibition and education are the functions of the City with respect to these institutions, and research is something the institutions should undertake on their own with private funds, private initiative. However, I was finally persuaded by Mrs. Pratt, Mr. Harding and Dr. Robbins that this was an exception . . . Originally, I talked about this problem to the late Mayor LaGuardia, who had some interest in it, then to his successor, and it was finally decided that the City would make a modest contribution and, like all modest contributions, this one grew —they always do—and at the same time the contributions from the private agencies, the philanthropists, one of the foundations, grew proportionately.

"Like a good many people, I like to put my good money on individuals, bet on individuals rather than on brochures, and causes and charters and laws, and in this case I must say that along with Mr. Constable and his predecessor, Mr. Anderson, we felt we were betting on a sure thing in the case of Dr. Robbins. I think that out of this new laboratory will come some of those miraculous drugs, cures which have lengthened the span of life and made life easier for a great many people . . .

"I want to say one more thing — I have said it before, but it can't be said too often —and that is, that this New York Botanical Garden represents a very happy union, a combination of private and public effort. The elected public officials and their appointees have something of value to contribute, perhaps even something beyond what they can dig out of the treasury. The private trustees have not only what they can contribute out of their own pockets and what they can get from foundations, but they have a knowledge of this kind of work that we completely lack, and the continuous enthusiasm which we can't afford, and they are the people who have the imagination, who prepare the programs, who run the show. We provide the land, we provide some funds, and knowledge of the reactions of the public which would not be available otherwise. It is a very happy combination. It has worked well over the years."

Dr. John A. Krout (Vice-President and Provost of Columbia University representing Dr. Grayson Kirk, President of the University): "Just sixty years ago, the trustees of The New York Botanical Garden made an agreement with the trustees of Columbia University, and for just about twenty of those sixty years Dr. Robbins has been your representative on our faculty. We have, over the years, profited greatly by the agreement. Indeed, I am filled with admiration for the shrewdness of Columbia's negotiators and with gratification for the generosity of those who negotiated on the side of The New York Botanical Garden. If we were to carry out the letter of the law on this agreement, we might some bright day swamp you with students eager to take advantage of the resources of The New York Botanical Garden, for you volunteered to teach any of us who wanted to study botany and the things in which you're interested here at the Garden. You have ministered to us in ways beyond our telling, and we hope that the connection with the University has been rewarding for you.

"Perhaps I am not presuming if I speak not only for Columbia but for other insti-

tutions of learning in this metropolitan area. I think Father McGinley, for instance, would forgive me if I said Fordham, like Columbia, is deeply indebted for all you have done for students and scholars in giving stimulation, research facilities, and the opportunity to use the treasures of your library and of your herbarium."

Dr. Detlev W. Bronk, President of the Rockefeller Institute for Medical Research and President of the National Academy of Sciences: . . ."The celebration of a new facility for the discovery of new knowledge regarding the laws of nature is an event of great importance, even in a city so diverse and large as ours. For the greatness of a city is gauged by the quality of its people and their institutions through which they further their intellectual and spiritual growth. Long after cities have decayed, the influence of their cultural institutions on the spirit and the minds of men continues. Through the transmission of knowledge from generation to generation, the achievements of institutions such as this are immortal. I weary of hearing our civilization decried as a material civilization, for I know enough of those who made possible the great industrial development built upon technical and scientific achievement to know that our so-called material civilization is an expression of man's determination to grow and to build a more desirable way of life with greater scope of action. I never tire of flying into New York and seeing that magnificent spectacle which is ours, but I would go on to say that it is wholesome to remind ourselves often that these great accomplishments of man have been enabled by our understanding of nature and the use of nature in accordance with the laws of nature. When man violates or disregards those laws, man suffers. This we often overlook with a tinge of human arrogance in the environment man has created for himself.

"These remarks are pertinent to the occasion because to include works of nature in our cities is a wholesome reminder of our place and role in the totality of nature. Emphasis on growing things is of especial value, for growing things will emphasize regard for life including the life of man which is so often overlooked in our machine age and in our urban civilization. Several days ago I was re-reading George Trevelyan's moving essay on natural beauty. There I found, as I had found before, this sentence: 'By the side of religion, by the side of science, by the side of poetry and art, stands a natural beauty as a common inspirer and nourisher of them all.' Well, as you foster regard for natural beauty here in the Garden and throughout the city, too, I like to think that you will set an example for the greater development of beauty by man himself. As we look at this great city, now rebuilding, is it too much to hope that we can build for God's noblest creation—which is Man—homes and surroundings that are more akin to nature? These, I think, are among the greatest contributions of your institution.

"The second of which I would speak is the fact that you make possible the diffusion of knowledge to many who are outside the narrow bounds of science. We who are concerned with the discovery of the new laws of nature are increasingly concerned about the tremendously increasing body of knowledge which even we find difficult to encompass and to understand. But it is an even greater threat to our democracy if we have those who know and those who do not know . . . You do much to further the understanding of science. I am reminded on such an occasion as this of the words of Louis Pasteur: 'Take interest,' said he once, 'take interest, I beseech you, in those sacred institutions which we designate under the expressive name of laboratories. Demand that they be multiplied and adorned. They are the temples of wealth and of the future.' Here it is, in this new laboratory you have created, that humanity grows—becomes stronger and better. Here it learns to read in the works of nature symbols of progress and of universal harmony.

"One other lesson that I derive from this occasion and your institution is this. One of the finest ideals which we have inherited from our ancestors is the sense of individual responsibility, the welfare of one's community of fellows. From the earliest days of our nation until now, men and women have defended the priceless freedom of an individual, to exercise his generous instinct . . . The generous contributions of time and effort and money, the building and maintenance of this institution, are evidence of the continuing vitality of that quality of American citizenship. The generosity of those who have made possible this new laboratory is a noble example of America's traditional desire to build a better nation and further the welfare of mankind. The objectives of their generosity remind me of the lines of Edwin Markham when he said, 'Why build these cities glorious if man unbuilded goes. In vain we build the world unless the builder also grows.'

"For the success of your new laboratory I bring you warm best wishes, and with great assurance that the new association between The New York Botanical Garden and the Rockefeller Institute for Medical Research will add to the totality of human welfare."

Dr. William J. Robbins: "You and I have faith in research, the effort to increase man's factual knowledge of himself and of the world about him. We know that research has given the average citizen better medical care, a better diet and more solid comfort than the kings of France with all their wealth and power could command; research has increased the average length of life in this country by more than twenty years in the past century. It has told us how to split the atom and revealed a new source of energy of almost unlimited potential value. We have faith that further research will make life more satisfying and more pleasant for the human race than it has ever been before; because there are still areas where our ignorance is profound and many questions for which we have no answers. Nowhere is this ignorance greater and of more immediate concern to us, as part of the living world, than in the field of biology. This laboratory is designed to combine the discipline of the chemist with that of the biologist in attacking some of the fundamental problems in plant biology in the belief that life processes are basically the same in plants and animals, and that we can learn a great deal (and in some instances more readily) of what goes on in our own bodies by studying what happens in a plant. This point of view has been fully justified by the results of research carried on during the past twenty or more years. I do not intend, however, to deliver a lecture on the value of research nor on the problems we shall investigate with the facilities provided by this new building.

"My major purpose in appearing here today is to thank all those who have through their interest and cooperation made

Dr. William J. Robbins personally conducted Hon. Thomas C. Desmond and Mrs. Harold I. Pratt, members of the Board of Managers of The New York Botanical Garden, and Dr. Detlev W. Bronk, President of the Rockefeller Institute for Medical Research, on a tour of inspection of the new research-laboratory building on October 24, 1956

this building possible. It is the result of private initiative and generosity combined with support from public funds given by a wise administration of the City of New York. We are especially indebted to Joseph Swan who, as President of the Board of Managers of The New York Botanical Garden, initiated the campaign which gave us the laboratory building; and to Charles B. Harding under whose leadership it was brought to a successful conclusion; to Mrs. James Cox Brady who was instrumental in securing the first substantial contribution; to Mrs. Harriet I. Pratt whose generous gift gave the final impetus to the accomplishment of our goal; to Mrs. J. Henry Harper for loyal support and devotion beyond the call of duty during the early days of our campaign; to Mrs. David Rockefeller for her continued interest in the laboratory and its research program; to my friend and distinguished colleague, Dr. Detlev W. Bronk, President of the Rockefeller Institute for Medical Research, whose understanding and interest has meant so much to me; to Commissioner Moses, without whose aid the program would never have been completed. There is an old saying of the East that some men are worth a thousand but there are also a thousand men worth but one. I dare not state the high equivalence I place on Mr. Moses, or I would fracture this old adage beyond repair and be considered undemocratic! My thanks, also, to Howard Bayne for the Bayne Fund which supports, in part, the work of the laboratory; to George Murnane who established the Alfred H. Caspary curatorship; to the Advisory Council of The New York Botanical Garden, and especially to Mrs. Thomas J. Watson, a member of the Council and last, but not least, to the more than two hundred donors, organizations, and foundations which contributed to the construction of the building and its equipment.

"I must pay my respects also to the architects, Brown, Lawford and Forbes; to the Warshaw Construction Corp. and Warshaw Bros. Inc., the general contractors; and to the personnel of the Park Department of the City of New York, under whom the contract was completed. I must mention gratefully Vincent Rampino, Superintendent of Buildings and Grounds at The New York Botanical Garden, and his men who have worked so faithfully to put the building in final condition; Henry de la Montagne, Assistant Director, who has given his devoted attention to many trying details during the course of this project; and to Dr. Richard Klein, who has carried much of the burden for the Garden during construction and installation of equipment.

"No one can watch a project of this sort grow and take its being without realizing that it requires the efforts of many devoted people. To all of them, I express the thanks of The New York Botanical Garden, its staff and its friends."

"Golden Jubilee Merit Citations." At the fiftieth anniversary of the Botanical Society of America, Inc., certificates of merit were presented to Dr. William J. Robbins, Director, Dr. B. O. Dodge, Plant Pathologist Emeritus, and Dr. H. A. Gleason, Curator Emeritus of The New York Botanical Garden. We quote the citations herewith, as printed in the October 1956 issue of "Plant Science Bulletin:"

Bernard Ogilvie Dodge, whose perceptive researches into the taxonomy, evolution, and pathological relations of the fungi have not been surpassed, but only overshadowed, by his discovery and exploitation of *Neurospora* as a principal source of genetical truth.

Henry Allan Gleason, for his work on tropical and temperate floras of America, and for the ideas and inspiration which he has supplied to the field of systematic botany.

William Jacob Robbins, a physiologist whose studies have enlarged our knowledge of the growth and nutrition of plants, and an administrator the breadth of whose labors has notably contributed to the growth and nutrition of all phases of botany.

Dr. Louis Otto Kunkel, member of the Board of Managers of The New York Botanical Garden, was also cited:

Louis Otto Kunkel, for his researches and indefatigable efforts in experimentation; for his wise counseling of associates and students, for experimental techniques and publications; and for his productive studies on the nature of plant viruses.

Gift to Laboratory. A contribution of $6,600 was received in November 1956 from the Damon Runyon Memorial Fund for Cancer Research, for research on plant tumors in the laboratory of The New York Botanical Garden.

Dr. Maguire Returns From Abroad. Dr. Bassett Maguire, Curator and Coordinator of Tropical Research, returned to The New York Botanical Garden in November after spending five months visiting and studying at botanical institutions in Europe. While abroad Dr. Maguire addressed a special meeting of the Royal Anthropological Institute in London on the subject of "An Akawais Amerindian Village, British Guiana," and a general meeting of The Linnean Society of London on "Return to the Collecting Grounds of Richard Spruce: Present Day Exploration in the Headwaters of the Rio Orinoco Casiquiare and Rio Negro, South America."

American Fern Society. Members of the American Fern Society met at The New York Botanical Garden on December 1, 1956, and spent the morning studying specimens in the fern house and herbarium. In the afternoon an informal meeting was held around the topic "Ferns as a Hobby," followed by demonstration and discussion of more technical studies. Dr. D. P. Rogers, Curator of The New York Botanical Garden, was a member of the committee to arrange the meeting.

American Rock Garden Society. The second symposium of the American Rock Garden Society was held at The New York Botanical Garden on December 7, 1956. At the morning session, Edgar L. Totten, Secretary of the Society, discussed "Dependable Rock Garden Plants for Beginner and Advanced Amateur," and Louis P. Politi, Head Gardener of The New York Botanical Garden, gave a practical demonstration on "Propagation of Herbaceous and Woody Plants for the Rock Garden." In the afternoon the members enjoyed the superb floral studies from the cameras of Raymond D. Wood, A.R.P.S.—his subject "Wild Flowers Along New England Trails" — and of Harold Epstein, President of the Society—"Western Mountains and Flowers."

Henry Fleming, Regional Director of the Society and entomologist in the department of tropical research of the New York Zoological Society, was responsible for the program.

Argyroxiphium gymnoxiphium (Gray) Keck

Something old, very new. The very rare plant pictured above flowered the past summer in Strybing Arboretum, Golden Gate Park, San Francisco. It is one of the Hawaiian greenswords, *Argyroxiphium gymnoxiphium* (Gray) Keck. Its awesome scientific name literally means the naked-sworded silversword, because its leaves are green instead of silvery white with appressed wool as in the better known species. This strange member of the sunflower family (Compositae), among the most primitive is native only in rugged canyons of the Kauai, where it may grow to a height of twelve feet. This individual, which bloomed in its sixth or seventh year, may be the first ever to come to flower in the United States.

Dr. Keck, before he joined the staff of The New York Botanical Garden, made a study of the relationships of the Hawaiian silverswords and greenswords. He received much assistance from Dr. Otto Degener, Collaborator in Hawaiian Botany of the Garden staff and resident collector in the Islands. Dr. Degener sent seed of this plant to Dr. Keck, who, in turn, supplied it to Eric Walther, director of the Strybing Arboretum. We are indebted for the photograph to Dr. Elizabeth McClintock, of the botany staff of the California Academy of Sciences, who sent it to Dr. Keck because of his association with this novelty.

The Gertrude S. Burlingham Scholarship. The inauguration by Miss Gertrude Sturges, of Winter Park, of a fellowship honoring Dr. Burlingham was announced in the March-April issue of THE GARDEN JOURNAL. Miss Sturges died in Philadelphia on November 7, leaving a bequest for the

endowment of the Gertrude S. Burlingham Scholarship in Mycology at The New York Botanical Garden, "for the assistance of students in obtaining an education in mycology." No appointment will be made for 1957, but under present plans the scholarship will subsequently be awarded annually.

During the past summer Robert J. Bandoni of the University of Iowa, with Mrs. Bandoni, spent three months working as Burlingham fellow in the cryptogamic herbarium.

Miss Luella K. Weresub of the University of Toronto put in a summer's work on the fungi, as recipient of a fellowship financed by the Bache Fund of the National Academy of Sciences. Both Mr. Bandoni and Miss Weresub are graduate students in mycology.

Dr. Robbins Elected Trustee of Rockefeller Institute. Dr. William J. Robbins, Director of The New York Botanical Garden, was elected a trustee of the Rockefeller Institute, according to an announcement made November 30, 1956, by David Rockefeller, Chairman of the Board.

Dr. Robbins is currently president of the American Philosophical Society and treasurer of the National Academy of Sciences.

Advisory Council. At the annual meeting of the Advisory Council of The New York Botanical Garden on December 6, 1956, Mrs. Edward C. Jameson was elected corresponding secretary to succeed Mrs. Antonie P. Voislawsky.

American Association for the Advancement of Science. At the 123rd meeting of the American Association for the Advancement of Science, held in New York City December 26-30, Dr. William J. Robbins, Director of The New York Botanical Garden, presented a paper in the symposium on "Problems of Aging;" Dr. David D. Keck, Head Curator and Assistant Director of the Garden, presided at the session for general papers on systematic botany and Dr. Alma W. Barksdale, Research Associate, attended the sessions on "Genetics of Fungi."

Mrs. Clement S. Houghton died suddenly at her home in Chestnut Hill, Mass., on October 28, 1956. Mrs. Houghton, who became a sustaining member of The New York Botanical Garden in April 1935, a life member in 1945, and was elected a member of the Corporation on June 10, 1938, was a truly distinguished woman and her particular place in the horticultural world will not be filled. She was also a member of the Advisory Council.

She was one of the charter members of the American Rock Garden Society, a member of its Board of Directors for twenty-two years, president five years, and honorary president since 1950. Her estate with its beautiful rock and moraine gardens received the Hunnewell Medal from the Massachusetts Horticultural Society in 1940. She had been a member of the latter organization for many years and received many honors for her exhibits at the Boston spring shows.

Mrs. Houghton was a member of the Garden Club of America, a member of its Board of Associates, of its Board of Editors, and of its Horticultural Committee for many years; a member of the New England Farm and Garden Association, of the Horticultural Society of New York, of the Alpine Garden Society, and a fellow of the Royal Horticultural Society. She judged at the Chelsea Show in London as well as at the spring shows in Boston, New York and Philadelphia.

BOOK REVIEW (from page 26)

membered that the book was written obviously for distribution in England. A number of the plants mentioned are not available here and, indeed, would not survive in the United States, even with the utmost care.

I feel this is a delightful little book that will further whet the appetite of the advanced rock gardener and perhaps put the novice on the right track toward natural and sensible rock gardening.

WALTER A. KOLAGA
Mayfair Nuseries
Nichols, N. Y.

GARDEN ROSES. Stanley B. Whitehead. 96 pages, illustrated, indexed. Dover Publications, New York. 1955. (Printed in Great Britain) 65c

This self-described "small . . . volume," that touches lightly on all rose matters geared to the tastes and needs of the English gardener, should appeal to the leisure hours of the seasoned American rosarian.

Variances in climatic conditions create planting recommendations and cultural practices entirely "foreign" to our own, here in the East. These variances, however, indirectly provide the book with its chief charm, since Mr. Whitehead's listings of varieties that "do best" in England in some instances, contain more names that are unfamiliar (totally or partially) than familiar. This will, of course, intrigue the experienced rose-lover.

Space does not permit the author to dig deeply into any special field. He therefore moves quickly from the botanical backgrounds to the more practical matters of soil, planting, and maintenance. He rests rather more interestingly on the versatility of the rose in its many classifications. In fact, just about one-half of the book is devoted to references of recommended roses (for England, of course) in the various categories.

Of least value, because they are unnecessarily complicated, are the discussions on fertilization. These contain recommended "compounds" so opaque (by American standards) as to be worthless.

Perhaps the liveliest and most absorbing paragraphs are those which theorize on the several methods of pruning. These advance what appear to be arresting ideas, but which the author develops into a surprisingly conservative conclusion. These pages (40 through 43) are sufficiently startling to invite an immediate re-reading.

Garden Roses is not a particularly "warm" book, as rose books go, but by its very context becomes unique reading material for the avid hobbyist.

LOUIS C. GROSS
East Paterson, N. J.

THE COMPLETE BOOK OF GARDENING AND LAWN CARE. Will Piegelbeck. 144 pages, illustrated. Random House, New York. 1956. $2.95

This book, illustrated with many photographs and drawings, is written for the person who wants a simple and easy-to-understand book composed of simple terms and "how to do it" step-by-step drawings.

There are many plant lists contained in chapters on the site, soils, lawns, flowers, trees, shrubs, fruits and vegetables. There is a chapter devoted to what to do each month of the year.

Of particular interest is the weights and measures lists. In most books these lists are not complete enough and most people must hunt through several books to find enough tables to convert certain spray directions for one hundred gallons to three gallons for a few plants without too much guess work.

The chapter on insects and diseases suggests many of the up-to-date sprays for their control.

SAMUEL F. BRIDGE, JR.
Greenwich, Conn.

LILIES AND THEIR CULTIVATION. M. E. Leeburn. 96 pages, illustrated, indexed. Dover Publications, New York. 1955. (Printed in Great Britain) 65c

This little book by an English grower is written for the beginner with lilies in England. The cultural instructions are very sketchy and scarcely adequate for the beginner in this country. The discussion of diseases in particular is very brief, and without more information than is provided, the beginner is not likely to make much headway in controlling the diseases which are the principal cause of trouble in growing lilies. The chapter on hybridizing does not provide much useful information for the would-be breeder.

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BOOK SERVICE

THE NEW YORK BOTANICAL GARDEN
Bronx Park, New York 58, N. Y.

Soils, planting, lilies in pots in the greenhouse and propagation are discussed briefly. Half of the book is devoted to lily species and hybrids with brief descriptions and cultural instructions for each.

The author's style is pleasantly informal and the book is easy to read. A surprisingly large number of cultural points are mentioned and should stimulate the reader to seek further information elsewhere.

GEORGE L. SLATE
N. Y. State Agr. Exp. Station
Geneva, N. Y.

THE COMPLETE BOOK OF GARDEN AND OUTDOOR LIGHTING. Bernard Gladstone. 120 pages, illustrated (drawings by Richard Stasio); indexed. Hearthside Press, New York. 1956. $2.95

This book is a practical introduction to garden lighting. The author emphasizes that for maximum effectiveness, each light must fulfill a specific function in the lighting scheme, i.e., to light up portions of the garden, to illuminate a terrace or other recreational area, to light up walks, driveways and service areas. He recommends the use of permanent outdoor outlets, professionally installed, using circuits separate from the interior house system. In Chapters 3 and 4, he describes various types of outdoor lighting fixtures and equipment, underwater lights for garden pools, and flood lighting of trees and large shrubs with mercury vapor lamps. There is a useful chapter on lighting other outdoor areas and a further chapter on lighting walks, driveways and entrances. The author properly emphasizes that in lighting such areas, glare should be avoided, and that the lights should be so placed that they do not shine in neighbors' windows or home grounds (p. 72). The latter is not as easy as it sounds and is, unfortunately, only too often disregarded. The author suggests that work lights be installed to enable the home owner "to complete the many chores that must be done around the home grounds" for which "often the only time available is after dark" (p. 75). Perhaps the home owner who finds himself in this predicament should reexamine his gardening schedule—he may have taken on too much. There is a chapter for the "do-it-yourself" enthusiast, on building outdoor lighting equipment and accessories. The insect problem is discussed, but it is doubtful whether any of the suggestions made will deter a determined mosquito. Safety precautions are emphasized throughout the book and are summarized in a final chapter which should be required reading for anyone attempting such work. There are excellent photographs and drawings.

GOVE B. HARRINGTON
Katonah, N. Y.

CHEMISTRY AND USES OF PESTICIDES. New 2nd Edition. E. R. de Ong. 334 pages, illustrated, indexed. Reinhold Publishing Corp., New York. 1956. $8.75

Dr. de Ong, formerly assistant entomologist at the University of California and presently a consulting entomologist, has completely revised his earlier book to include the latest information on insecticides, fungicides, herbicides, rodenticides, repellents and seed disinfectants. Although this book is too technical for most home gardeners, it should be very helpful to agricultural chemists, entomologists, pathologists, and horticulturists who want to keep posted on the latest chemicals for solving plant growing and protecting problems.

P. P. PIRONE

INSECT PESTS OF FARM, GARDEN AND ORCHARD. Leonard Marion Peairs and Ralph Howard Davidson. 661 pages, illustrated, indexed. John Wiley, New York. 5th edition. 1956. $8.50

The latest edition of this book, long used as a college text by students in economic entomology, was largely revised by the junior author, Dr. R. H. Davidson, associate professor of entomology at Ohio State University. Sixty new pests and their control are included in the present edition. Also new is an excellent, up-to-date chapter on insecticide formulations, application equipment, dilution tables, and charts on compatibility. More than five hundred excellent illustrations further increase the book's usefulness.

P. P. PIRONE

TOPSOIL AND CIVILIZATION. Tom Dale and Vernon Gill Carter. 270 pages, illustrated, indexed. University of Oklahoma Press, Norman, Okla. 1955. $3.95

Through a unique integration of world history, modern soil science and philosophy, the authors of *Topsoil and Civilization* develop the theme of conservation of natural resources (primarily soil productive capacity, water and minerals) as a prime factor in the maintenance of a civilized society.

Civilization is pictured as beginning when a sustained *surplus* of food and fiber can be produced. This relieves a portion of the population from the burden of producing food for survival, permitting the development of arts, science, literature, and other marks of civilization.

Using past civilizations as case histories, the authors present some convincing evidence to support the argument that the ultimate decline of these civilizations was a result of exhaustive exploitation of natural resources. Over-cropping and grazing of land, the removal of forests and resulting erosion have repeatedly produced "well rained on deserts," silted in rivers and harbors, and caused a decline in living standards.

Starting with the Nile Valley and Mesopotamia, the authors find a repetition in the cause and effect of land exploitation in the rise and fall of many civilizations throughout the ages in Europe, Asia, Africa and the Far East. It is repeatedly pointed out that the ability of a people to rise above the poverty level depends on the productive capacity of the land, and their ability to recognize and maintain this productive capacity for successive generations determines the longevity of the civilization.

Coming home to the United States in the final chapter, the authors unobtrusively, but forcefully, bring the reader face to face with the terrifying rate at which our modern civilization is using up our natural resources and depleting the productive capacity of a rich and abundant land which we occupied, civilization-wise, only yesterday.

Any serious-minded reader will feel the urge to rush out immediately and begin building terraces, planting trees, and covering the bare land with grass. (I actually seeded a bare spot in my lawn.)

The authors, although not pessimistic

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about the future of America because we are able to recognize the problem before it is too late, do take a dim view of the optimist who foresees a future civilization surviving on synthetic foods and atomic energy independent of plants and soils.

Although somewhat "choppy" and filled with repetitions, *Topsoil and Civilization* is useful and interesting reading for anyone, valuable reading for everyone who owns land, and should be necessary reading for all state and national leaders in the field of agriculture.

Its mixture of ancient history with modern science, with a dash of philosophy and a pinch of allegory, makes it entertaining and educational as well as inspiring.

Many philosophers have explained the rise and fall of civilizations, but none have been so "down to earth" about it. Although not a literary masterpiece, the authors have covered a lot of time and geography in the short space of two hundred and fifty pages, the essence of which should be, and probably was intended to be, jolting to the generations now occupying the land—any land.

JOHN C. CAIN
Professor of Pomology
N. Y. State Agr. Exp. Station

SOIL STERILIZATION. W. J. C. Lawrence. 169 pages, illustrated, indexed. Macmillan, New York. 1956. (Printed in Great Britain) $3.50

The aim of this book is to make available scientific information and practice as a basis for soil sterilization instead of relying on the rule of thumb practices usually used for soil sterilization. The book is subdivided into three major parts: 1) heat sterilization, 2) chemical sterilization, and 3) conclusion. The chapters discuss such subjects as what heat does to soil life, to soil chemicals and to soil structure, what sterilization does to plant growth, properties and action of steam, the heat requirements of soils, sterilizing soils at home in bins, greenhouses and by electricity. The apparatus used in modern methods and in future methods is discussed as well as the chemical action of chloropicrin, formaldehyde and tar-acids and nematocides. The sterilization of several kinds of soils with steam, electricity or by chemicals is discussed in the last chapter. Physical and chemical properties useful in soil sterilization work are included in the Appendix.

Anyone having problems or interested in soil sterilization will read this book with profit. The subject is treated with sufficient theoretical background to interest those interested in theoretical aspects as well as being practical and of interest to the home gardener and the commercial grower of crops requiring soil sterilization.

The book is rather easy reading. The illustrations are good and several excellent diagrams are included.

C. L. W. SWANSON
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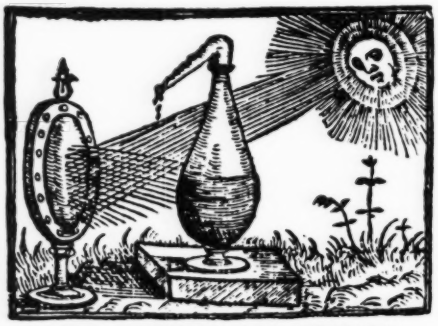
New Haven, Conn.

PLANT PHYSIOLOGY. Meirion Thomas. 692 pages, illustrated, indexed. Philosophical Library, New York. 4th edition, revised, 1956. $12

The general contents remain the same, but this latest edition of *Plant Physiology* includes a new chapter on photoperiodism and vernalization, and an appendix describing techniques used in partition chromatography and in experiments with isotopic tracers leading to some of the developments reported in the book. The most extensive changes occur in the chapters dealing with enzymes, respiration, and photosynthesis.

COMMERCIAL WAXES. H. Bennett, 688 pages, indexed. Chemical Publishing Co., New York. Second edition 1956. $15

Since the appearance of the first edition of *Commercial Waxes* in 1946, the applications of natural and synthetic waxes have expanded in many industrial fields and new formulas and blends have been developed. The second edition includes this information as well as correcting certain errors and ambiguities, which occurred in the first edition, and bringing the text up-to-date. Over one hundred and sixty tables list important data, and over sixty graphs show the relationships of physical properties, effects of adhesives, etc.



LET THERE BE HERBS

The Rise of the Pizza

Twenty years ago Americans living outside of the cities knew little or nothing about pizzas. They were thought to be some strange food served only in Italian restaurants or bar and grills displaying a large neon sign "Pizzeria." Priests and policemen who get around in the foreign sections of cities know what is good there. Many a weary cop stops to pick up a "pizza pie" on the way home from work for a bedtime snack. There is something about a pizza which makes it possible to eat it anytime, even first thing in the morning when turning in after a night's work. The heat of the oven is sealed in by the Parmesan cheese sprinkled over the top, keeping it hot all the way home from the job. A tough pie-shaped crust turned up at the edges to hold in the tomato sauce makes its own plate. Pizzas are eaten out of hand at fairs and all sorts of public gatherings today as hot dogs have been eaten in the past.

Housewives never thought of making their own until the food editors of magazines conceived home-made versions, using English muffins for the base and a variety of sauces and toppings. The story was that real pizzas could only be made in the big baker's oven used for French and Italian bread with a long-handled, flat shovel to place the circles of dough in it. But American ingenuity was not satisfied with such an answer. Pizzas were offered to be baked at home by frozen food packers. These substitutes are not as good as the original. The English muffins are too soft, the frozen pizzas have too little sauce on them, probably for convenience in wrapping. Then the macaroni and spaghetti manufacturers brought out pizza mixes with a can of sauce in the same package. The mix, like roll mixes (just some flour and salt in one box, a package of yeast, and you add water) is rather expensive, because it makes only one large pizza or a couple of small ones. According to the directions, you are to bake the pizza in a pie tin.

It is this baking a pizza in a pie plate that causes it to lose much of its fine quality. The edges get brown and tough while the centers under the sauce, which is a thick tomato sauce flavored with oregano and basil, take a long time to become thoroughly cooked. That is why the oven-baked Italian pizzas are so good—they are slid onto the hot oven rack and become crusty on the bottom as well as the sides.

We have discovered a way to make pizzas which have all the delicious flavor of the best Italian pizzas with no baking at all. At a summer fair we tasted pizzas deep fried in oil and sauced and sprinkled with cheese after they were golden on both sides. They were small enough to hold in the hand, but retained the heat to permit frying a batch for four people in a wide iron skillet and keeping them until all were ready to serve at once. As soon as we discovered a pizza dough recipe in Clementine Paddleford's column in the Sunday paper, we knew that pizzas would become a Saturday night supper tradition in our home.

Making Italian spaghetti sauce is already one of our weekly jobs, and pizzas offer new variety in using the meat-flavored tomato sauce which improves with storing in the refrigerator for several days. Here is a theme on which an herb lover can play many variations. Basil and oregano are vital to the sauce, even more so than garlic which some people cannot take. The meat can be browned and added at the beginning of cooking or meat balls can be cooked in oil first and then immersed. Chicken, veal, and left-over meat can be used to season the sauce or cut up and heated to be placed atop the pizza and sprinkled over with cheese. Anchovies, tuna fish, anything out of the sea seems to go with tomato sauce Italian style.

Pizza sauce

Brown one half pound of hamburger in four tablespoons of oil (olive or salad). Add one can of Italian tomatoes strained and one can of tomato paste with basil. Fill the tomato paste can with water and dilute the sauce with this. Season with salt, pepper and, at the end of two hours simmering, add one half teaspoon of dried basil and one half teaspoon of oregano.

Pizza Dough

Soften one package dried yeast in water. Place one cup of boiling water, one tablespoon of shortening, one teaspoon of salt and one half teaspoon of sugar in a mixing bowl. Cool to lukewarm and add the dissolved yeast. Stir in one and one half cups of flour and beat. Add another cup and a half of flour, beating hard and stirring the dough away from the sides of the bowl. Turn out on a floured board and knead until springy and smooth. Now you can cut off pieces and, dipping your hands in oil, shape them to make rounds three or four inches across. If cooking them at once, let them rise ten minutes in a warm room before frying in deep vegetable oil. Otherwise place them on wax paper in the refrigerator until time to fry. When golden-brown on both sides, drain and fill the center with sauce and such toppings as you like, especially lots of Parmesan cheese.

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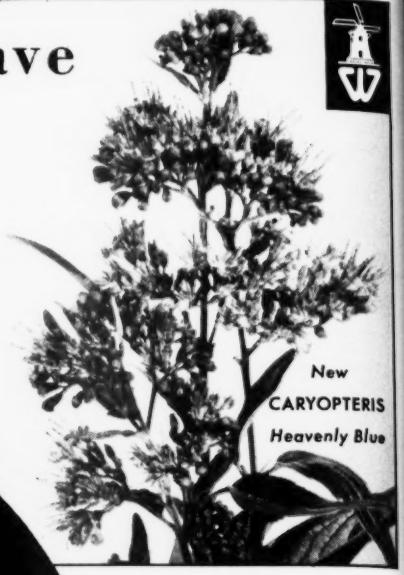

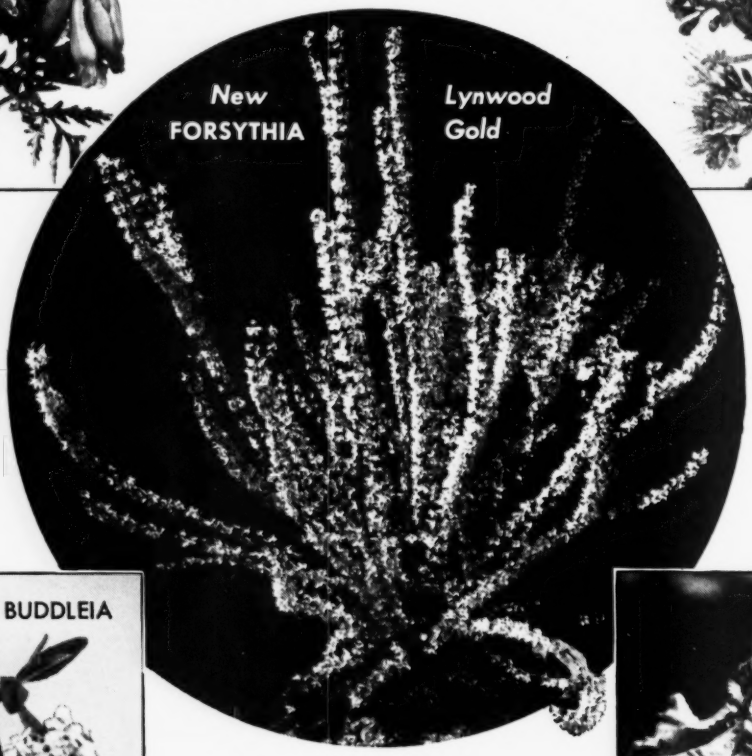

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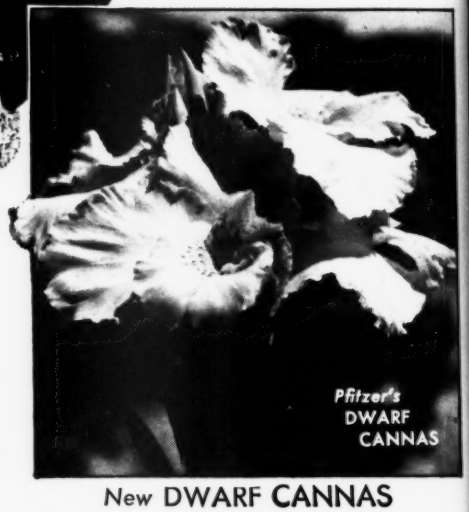

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